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OF
OPHTHALMOLOGY.

VOLUME I.—1884.

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VOL. I.

APRIL 15, 1884.

No. 1.

A CASE OF IRITIS WITH SOME INTERESTING INCIDENTS.

BY F. C. HOTZ, M. D., CHICAGO, ILL.

THE points of interest in the clinical observations I am to report are: 1. That atropine asserted its mydriatic power over the pupil to its full extent, while at the same time, on account of incompatibility, it seriously aggravated the iritis. 2. That duboisine induced glaucomatous symptoms during an attack of iritis under the same conditions under which in the same eye it had repeatedly overcome the inflammation before.

In March, 1881, L. H., aged 40 years, a robust butcher of Napersville, presented himself at my office with an acute iritis of the left eye. The inflammation began 6 or 7 days previously with severe peri-orbital neuralgia, which still persisted at the time of this first visit. The eye showed the symptoms of a very violent iritis; intense vascularity of the ocular conjunctiva and peri-corneal zone; interstitial haziness of the cornea; discolored and swollen iris, and contracted pupil, with numerous posterior synechiæ. Within three days, however, all these synechiæ yielded to the action of atropine, and the pupil became dilated uniformly, though not ad maximum. But for all this the inflammation had not only not diminished, but appeared rather increased; there was considerable chemosis of the conjunctiva, greater haziness of the cornea, and a small hypopyon. The patient also informed us that each instillation of atropine caused a smarting sensation, which lasted about 20 minutes. Atropine was evidently not compatible with that eye; duboisine was, therefore, substituted, and at once the inflammation began to

subside, and the eye made a quick and complete recovery with $V = \frac{20}{20}$.

In March, 1883, this gentleman had a similar attack of iritis in his left eye. Duboisine was used from the beginning; no chemosis, no hypopyon appeared, and the eye was well in 10 days.

During both attacks of iritis the patient had not been stopping in the city, but came in from his town (30 miles) every two or three days. Duboisine locally and calomel (gr. $\frac{1}{4}$ pro dosi) internally constituted all the medical treatment he received. And it seemed to be all that was necessary to lead the case to a successful termination.

On the 21st of August the patient came to me again with iritis of the left eye. The objective changes in the iris and pupil were exceedingly slight, the inflammation having set in but yesterday; but there was much chemosis of the ocular conjunctiva and very severe peri-orbital neuralgia. Leeches were applied to the temple; a brisk cathartic ordered, and duboisine prescribed; but I could not prevail upon the patient to remain in the city. On the 29th he came back, and in spite of complete mydriasis the inflammation was so violent that the patient at last concluded to remain in town. He was kept in a dark room, leeches were applied again, followed by warm fomentations with chamomile tea. Duboisine was instilled four times in 24 hours, and calomel ($\frac{1}{4}$ gr.) given three times per day. Under this treatment the inflammation subsided so quickly that on September 1, I allowed the patient to return home. He walked the short distance from my office to the railroad depot, where he arrived bathed in profuse perspiration, and in this condition he was exposed to draft all the way home. The result was a violent relapse of the iritis (Sept. 5). He was put at once under the same regime (dark room, cathartic) and treatment (leeches, warm fomentations, duboisine), and it seemed at first as if the inflammation would once more subside as readily as before. But the improvement lasted only 24 hours; and the following day (Sept. 7) the eye was worse than ever; chemosis increased, the cornea very dull and cloudy, the iris swollen, and the pupil muddy and not as well dilated as on previous day. The pain was very severe, extending over the

whole left side of the head, and the intra-ocular tension, which on frequent previous tests had always been found normal, was now markedly increased and reduced to perception of light.

Under these circumstances I regarded as futile any further effort to control the inflammation by medical treatment alone: surgical interference seemed unavoidable, iridectomy plainly indicated. I gave my opinion to that effect, and arranged with the patient to perform the operation in the afternoon (I had seen him early in the forenoon). In the meantime he was to continue with the warm fomentations, but to apply no more duboisine, as I would rather have the pupil more contracted by the time of the operation. When I called at the appointed hour to perform the operation I found my patient had changed his mind. As cheerfully as he had consented in the morning, so strongly he was now opposed to it, claiming that the headache was much less and his eye felt much better. I was inclined to suspect he only pretended feeling better, just as patients with the toothache often do when they get near the dentist. But the eye was certainly no worse, and I was not quite sure but what its tension was a shade less than in the morning, and the cornea appeared a little brighter. If this was really the faint beginning of an improved condition, was it due to the omission of the duboisine? In other words, had the duboisine caused the glaucomatous condition? And would the eye recover from it without operation, if no duboisine was used any more? The improvement of the eye following so closely upon the discontinuance of the remedy was a remarkable coincidence which attracted my full attention, and I therefore readily agreed with the patient to defer the operation until the next day. But I was very particular that in the treatment of the eye and in the patient's mode of living, nothing was changed except that the duboisine was left off.

The next morning I found the patient free from neuralgia, the chemosis diminished, and the intra-ocular pressure undoubtedly reduced, though still positive. But on the 11th it was normal, cornea clear, chemosis gone, and on the 15th of September no vestige of the inflammation was left; V was $\frac{2}{20}$, and the pupil of normal size and mobility.

A CASE OF TUMOR OF THE ORBIT. EXENTERATIO ORBITÆ. RECOVERY.

BY HENRY FERRER, M. D., SAN FRANCISCO.

MRS. OTERO, from Hermosillo, Mexico, consulted me on May 25, on account of her left eye. Patient did not know her exact age, but pretended to be about 64 years old. She was poorly nourished, but said she had always enjoyed good health. All I could ascertain from her about her disease was that, about eighteen months ago, she suffered very much with sharp shooting pains in the left eye and the left side of her head. During this period of pain her left eye became very much inflamed, and there was considerable lachrymation. The physicians, she then consulted applied several remedies to the lids which, however, gave her no relief. Gradually she began to see double, and she noticed at the same time that the eye-ball gradually turned inwards. She, therefore, covered it with a handkerchief under which, as she states, the eye became totally displaced. For about six months previous to consulting me, she was compelled to cover the eye during the night also, because the lids could not be closed over it even during sleep. When consulting me, she had two handkerchiefs tied around her head, one as a *monoculus* to cover the left eye, and one as a *mentoniere* (chin-bandage) to conceal a deep cicatrix extending from the left ear to the upper lip, the result of a love-token received in her younger days from her intended (which, by the way, is a very common practice in certain provinces of Mexico).

Status presens. The left side of the face presents a peculiar appearance. There is complete ptosis with bulging and œdema of the upper lid and considerable exophthalmus, the eye-ball being pushed inwards and downwards. The lower lid is apparently in its normal position, but its lower portion is œdematus, and this œdema increases downwards, until it forms a swelling of the size of a pigeon's egg in the zygomatic region. This œdematous infiltration is so sharply defined, that it has all the appearance of a neoplasm, and this condition is due to the callous cicatrix above mentioned, which prevents the œdema from extending

diffusely downwards. The palpebral, as well as the ocular conjunctiva, is slightly hyperæmic. Lachrymation and secretion of the mucous membranes are normal. The iris is very dark, almost black; the pupil is small, but of the same size as the right pupil, and it reacts promptly upon light. The movements of the eye-ball are totally restricted outwards, partially upwards, and but slightly downwards. When she closes her eyes gently, the left eye remains slightly uncovered, but with a great effort and an increased action of the lower lid, it can be totally covered. Vision is normal. Emmetropia. The fundus shows no difference in appearance from that of the right eye; both are normal.

Upon palpation the exophthalmus is found to be caused by a hard growth situated at the region of the lachrymal gland. The tumor is quite hard and apparently well defined, but it cannot be moved sideways, nor be pressed back into the orbit. From the middle of the upper lid it extends outwards and downwards to the lower outer orbital margin. R. E. emmetropic. V. normal.

On the 27th, I proceeded to remove the tumor with the assistance of Drs. M. Richter, P. de Vecchi and Olino. The patient being put under the influence of ether, I began the operation. I intended to carry it out in the same manner as *O. Becker* had operated in his case of bilateral lymphadenoma of the orbit (*Græfe's Archiv* XVIII, 2. page 56), and at the operation of which I had been present. I first made an incision along the upper orbital margin from the middle of the upper lid downwards in a curve to the outer angle of the palpebral fissure. Then I divided the tarso-orbital fascia and with the handle of the scalpel and a periosteum-elevator tried to enucleate the tumor. But the growth was so large that, in order to be able to reach the deeper parts of the orbit, I had to take it out in pieces. In doing this I found that the external and the superior recti muscles of the eye-ball were already involved in the process. We, therefore, decided to abandon the first plan of operating with preservation of the eye-ball, to sacrifice the latter, and to perform exenteratio orbitæ.

After the eye-ball had been enucleated, and the ensuing hemorrhage had been stopped, I proceeded in the following manner:

I began by removing from the lids as much as possible of the conjunctiva, and by means of a pair of curved scissors and the periostium-elevator, I detached all the contents of the orbit from the walls of this cavity, as close to the bone as possible, even tearing portions of the periosteum in some places, where the attachments were too firm. At last, when all was loosened from the walls and attached only to the fundus of the orbit, this pedicle was cut with a strong pair of curved scissors. A very free hemorrhage ensued, but yielded easily to the application of *Paquelin's* cautery.

During the whole operation strict antisepsis was carried out. A 1 per mille solution of corrosive sublimate was used for the sponges, and a $2\frac{1}{2}$ per cent solution of carbolic acid for the instruments.

After the operation the cavity of the orbit was filled with a sponge, covered with carbolic gauze and salicyated cotton, and over these a compressive bandage was applied. No secondary hemorrhage took place. On the second day the sponge was removed from the orbit, and this cavity appeared to be free from all particles of the growth.

The patient was seen twice daily. Her temperature was never above the normal. The wound was dressed every twenty-four hours, and the cavity was filled with small pieces of carbolic gauze. For the first two weeks a solution of corrosive sublimate was used in dressing, and during this time granulations had formed in some portions of the orbital walls, but they were very pale and showed no tendency to bleed. To stimulate them, they were scraped with a small blunt scoop, and a $2\frac{1}{2}$ per cent solution of carbolic acid was substituted for the corrosive sublimate. In spite of this, the conditions did not improve. We then ordered pills containing gr $\frac{1}{9}$ of corrosive sublimate, one to be taken 3 times a day. Although no syphilis could be traced the pills appeared to produce the desired effect, for within a few days the granulations became more vivid, and the patient began gradually to gain flesh. On the 13th of October, when she was discharged, the lids were drawn into the orbit, but hardly any more so than in ordinary cases of enucleation. As I have been informed by her physician there is no sign of a relapse.

I cannot give the exact measure of the tumor because it was removed in pieces.

The anterior portion which before the operation had been felt as a well defined tumor, was about 4 centimetres broad and 2 centimetres thick ; further down in the cavity of the orbit the tumor had a more irregular form and involved some of the ocular muscles and the orbital fat.

The tumor and the eye-ball were placed into Mueller's fluid immediately after their removal. For about three weeks the fluid was renewed on every second or third day, then the specimen was washed and hardened in ordinary alcohol.

The eye-ball was first examined, and special attention was paid to the optic nerve. There was nothing abnormal. Then four pieces from different portions of the tumor were taken for microscopical sections. These sections I made with a Thomas' sliding microtome, and stained them with ammoniacal carmine or log-wood, and then examined them in glycerine. A large number of such sections were made of each of the different pieces, and they all presented the same characteristic features, namely : irregular herds of spherical cells, which were pressed together without any well-marked intercellular substance and surrounded by bands of connective tissue. It was easy to make very thin sections of some parts of the tumor, and these, when stained, took on a bright color. They consisted mainly of connective tissue and contained only a few small irregular heads of spherical cells. In other parts, the sections had to be made thicker, and these, when stained with carmine, never took on a bright color, when stained with log-wood, their color was a dark violet. The herds of spherical cells in these sections were very large, and they were divided by but few and narrow bands of connective tissue. They would tear very easily, if not carefully manipulated. Even slight pressure on the cover-glass would separate the cells from each other and would make them float about in the fluid, leaving no intercellular reticulum behind. When separated, the cellular elements appeared round and granular, and measured on an average 0.006 millimetres. No better drawing of some of my sections could be given than the Figure 2 of *J. Arnold* in *Becker's* case, above referred to, with the exception that I could not find any follicles.

From the foregoing I think I am justified in considering this neoplasm to be a lymphoma of the orbit, until I am corrected by better authority. Of this I shall report in a later number of this journal.

ON THE MICROSCOPICAL CHANGES FOUND IN A TATOOED CORNEA.

BY ADOLF ALT, M. D.

THE microscopical changes found in a tattooed human cornea have thus far been twice described in literature : once by *Browicz* (Gräfe's Archiv, XXIII., 3), and the second time by *Hirschberg* (Gräfe's Archiv XXVIII., 1).

The case described in the following shows a number of peculiarities which, I think, make it worth being placed on record.

Mrs. M. H., æt. 25, came to consult me on the 21st of November, 1879. She had lost the right eye nine years previous to this consultation in consequence of purulent conjunctivitis. A large leucoma which, according to her statement, nearly covered the whole of the cornea had been tattooed about three years after the eye had become blind by Dr. Kitchener of Lockport, N. Y.

For about a year the eye had been troublesome, giving her great pain at times, and she thought it was slowly growing larger. These symptoms had become aggravated during the last few weeks by an acute inflammation, and the patient being afraid of sympathetic trouble, came to me to have the blind eye removed.

Stat. præs. R. E. Considerable hyperæmia of the conjunctival and the ciliary blood-vessels. The cornea somewhat staphylomatous and grayish-blue. In its center a yellow spot is visible, which appears as if a calcareous lens was about to break through the cornea. The eye is very painful spontaneously, and the pain is aggravated by pressure on the ciliary region. + T 2 ; V = 0. — L. E. V = $\frac{2}{20}$. Perfectly normal.

Two days after this examination I enucleated the eye-ball. Operation and healing were normal.

When the eye-ball was perfectly hardened, I found that the lens was really calcareous and had nearly perforated the center of the cornea. The cornea was on the whole thicker than in the normal condition, and was lined with atrophied iris-tissue, except in the part where the lens lay. Here it was reduced to a very thin membrane. The optic papilla showed a deep excavation.

The microscopical conditions of the cornea were the following:

The epithelial layer of the cornea was, on the whole, some-



FIG. 1.

what thicker than normal. *Bowman's* layer was wanting nearly throughout. From the epithelial layer a large number of cell-cylinders, not simple papillæ, had grown into the corneal tissue, (See figure 1), some of which nearly reached through its whole thickness down to *Descemet's* membrane. These cyl-

inders varied not only in length, but also in thickness. The

majority of them were simply solid cylinders of epithelial cells. A number of them, however, were partially hollow, and thus formed cavities of varying size in the cornea, which were lined with a more

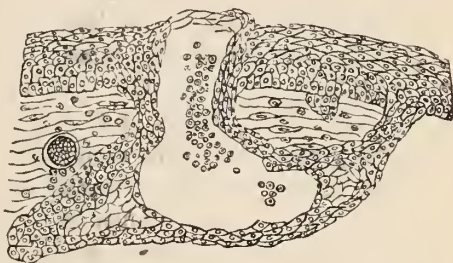


FIG. 2.

flattened epithelium, and contained a serous fluid in which a small number of lymphoid cells were suspended. (See figure 2).

An irregular arrangement of the corneal epithelium is never wanting where *Bowman's* layer has been destroyed. Solid epithelial cell-cylinders, however, growing into the corneal tissue in the manner of these just described, I have thus far never found, except in cases of malignant epithelioma. The case under consideration showed no other characteristics of a malignant epithelioma, and, moreover, the hollow cylinders are some-

thing not observed in malignant epithelioma. There can, I think, be no doubt but that these cell-cylinders have been formed in and mark the pricks of the tatooing needle. In *Hirschberg's* case no such epithelial formations are mentioned at all, and *Brovitz* describes irregular bundles of fibrous tissue in the corneal tissue as traces of the pricks of the tatooing needle.

I thought it quite strange that I could not find any pigment lodged in these epithelial cells, nor in the epithelium of the surface of the cornea. The pigment molecules of the ink were scattered all about in the corneal tissue proper, where, by their bluish-black color they could be easily distinguished from the uveal pigment which was also embedded in the cornea. These pigment molecules of the tatooing ink were either embedded in the corneal parenchyma cells, or they lay free in the corneal tissue. The center of the cornea was nearly free from them, while they appeared most numerous in its periphery, where it also seemed as if some of the pigment was enclosed in blood-vessels.

The changes in the remainder of the tissues of the eye-ball were of no importance.

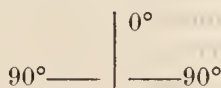
ON THE VALUE OF THE "PRISOPTOMETER" IN DETERMINING THE DEGREE OF MYOPIA.

BY H. CULBERTSON, M. D., ASSISTANT SURGEON U. S. ARMY.
RETIRED.

THE "Prisoptometer" is an instrument invented by the writer to determine ametropia by the means of a prism. Essentially it is composed of a single prism of glass, of about 3° total refraction, the apex of which covers, and is secured over, the half of a central opening of 3. mm diameter, in a diaphragm of metal, which latter can be revolved at pleasure. The patient seated, looks through the central aperture at a *single* white circle, on a dark ground, placed at a distance from the observer, of from fifteen to twenty feet. This circle has a diameter according to the refraction of the prism, or proximity of the eye to the circle, of about 150 to 200 m.m. From the influence of the prism

two images are seen. The prism being *fixed* at such a distance that the inner margins of the two images, the true and false circles, are tangent in the *emmetropic* eye. It follows that, in myopia the circles will appear to lap, and in hyperopia they will seem to be apart. It is only necessary to apply the proper lenses in front of the prism until the circles are tangent, and *these* will denote the glasses required to correct the ametropia. Astigmatism is detected in the same manner by revolving the *prism-disk*, so that thus the refraction of the eye can be determined quickly and accurately.

It should be stated that the scale of the instrument embraces a semi-circle, the verticle of which is 0° , and each quadrant, on the right and left, is divided into spaces of 10° each, running thus on either side from 0° to 90° .



This instrument has been accurately described in the "Cincinnati Lancet and Clinic," January 20, 1883, and as improved in the "Journal of the American Medical Association," January 5, 1884.

An article on the value of this instrument in determining the *total* and *manifest* hyperopia has appeared in the "New York Medical Journal," of March 22, 1884, p. 319.

The object of *this* paper is to decide what is the worth of this instrument in detecting myopia when the eye is, and is not, under the influence of mydriatics.

The maximum sum of dioptries of myopia shown in all the cases of the table, is greatest in those not subjected to mydriatics. Thus :

The sum of M, without mydriatics = D. 202.75.

" " " with " = D. 180.25.

" " " the difference, = D. 22.50 = 88.90 per cent.

This is a diversity in favor of the use of mydriatics to determine the absolute myopia present with the aid of the instrument, = 100.00 per cent.—80.90 per cent. = 11.10 per cent.

In the oldest member of the table the patient's age was 57 years, and the myopia equaled D 3.0 without, and D 1.5 with my-

driatics, a reduction of 50 per cent., and in favor of the employment of such agents to determine the actual degree of myopia at this age.

The youngest patient shown in the table is 12 years of age and in this case the myopia shown, with and without mydriatics, was equal in degree.

For all the cases of the table, the mean age is 25. years ; and based upon half the sum of the dioptries of myopia shown when not under mydriatics ($\frac{20.2}{2} \cdot \frac{7.5}{2}$), and the sum of dioptries of the same form of ametropia in those subjected to these agents ($\frac{1.8}{2} \cdot \frac{2.5}{2}$), the age at 25 years reveals only 11.10 per cent. in favor of the use of mydriatics to determine the absolute myopia present at that age.

If the cases be classified in age—periods of five years, and the dioptries estimated, as shown in the table, in each class, both when the patients are, and are not under mydriatics, the following is the result :

Age—Years.	Without mydriatics.	With mydriatics.	Per cent.
12—15	D 43.00	D 41.50	96.51
16—20	D 61.00	D 59.50	96.72
21—25	D 39.25	D 33.00	84.07
26—30	D 49.75	D 40.00	80.40
31—35	D 2.25	D .25	11.11
40—45	D 4.50	D 4.50	100.00
Over 45	D 3.00	D 1.50	50.00
<hr/>			
Total 45	D 202.75	D 180.25	

Thus it is shown from 12 to 20 years, and from 40 to 45 years, the manifest closely approximates the absolute myopia, or is equal to it in the latter class.

The low degree of absolute myopia shown between 31—35 years = 11.11 per cent., is due, no doubt, to the limited number of cases (three), and cannot be relied upon as an accurate index of the myopia revealed by the instrument for this “age-period.”

In the period “over 45 years” there are but two cases, and these, each aged 57 years. By reference to the formulæ in these examples, it will be seen that under the mydriatic the + D1 c of hyperopic astigmatism disappeared in the right eye, and so

also the + D 0.5c, H.A. in the left eye, leaving—D 0.75s in each eye, as the real degree of myopia. It would be more accurate to regard the astigmatism in these cases, as not hyperopic, but as simply denoting the presence of spherical myopia with less of this in a given meridian. Thus—D 1.75s — + D 1.0c = — D 0.75s in the R. E; and—D 1.25s — + D 0.5c = — D 0.75s in the left eye.

The same view in principle can be taken in cases 5, 8, 10, 11, 21, 22 and 23, it being remembered that accommodation—ciliary—sometimes is, and again is not relaxed while being tested, and mydriatics not employed.

The "age-period," 21—25 years, reveals, through the instrument, 84.07 per cent., and that of 26—30 years 80.40 per cent. of absolute myopia, after the use of mydriatics. As 100 per cent. is the apparent myopia, without the influence of these paralyzing agents, the latter means develop at these age-periods respectively, 15.93 and 19.60 per cent. of this form of ametropia. During the "age-period," 12—15 years, 96.51 per cent. of myopia is found, or $100 - 96.51 = 3.49$ per cent. of effect due to mydriatics. From 21—25 years the power of mydriatics = 15.93 per cent., or $15.93 - 3.49 = 12.44$ per cent. ; and from 26—30 years $it = 19.60$ per cent., or $19.60 - 3.49 = 16.11$ per cent. increased influence in these age-periods over the effect of such agents (mydriatics), found in those aged 12—15 years. To what is this effect due? Is it produced by the hyperopia present in these cases, shown when mydriatics have not been used? To determine the cause of this, estimate the sum of dioptries of hyperopia in the several cases up to 30 years, and deduct from the sum of dioptries of myopia found up to that age in the column "maximum myopia" of the table, which will reduce the influence of age, as a factor, in causing the augmentation shown of the myopic from the use of mydriatics.

This apparent hyperopia is evident in the following table :

No. of cases.	D H without mydriatics.				
5	-	-	-	-	+ D 1.50
8	-	-	-	-	+ D 0.75
9	-	-	-	-	+ D 0.75
17	-	-	-	-	+ D 0.50
18	-	-	-	-	+ D 1.25

No. of cases.						D II without mydriatics:
22	-	-	-	-	-	+ D 1.00
24	-	-	-	-	-	+ D 0.50
25	-	-	-	-	-	+ D 0.50
26	-	-	-	-	-	+ D 0.50
31	-	-	-	-	-	+ D 1.75
32	-	-	-	-	-	+ D 1.50
35	-	-	-	-	-	+ D 1.25
36	-	-	-	-	-	+ D 1.25
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Total	13	-	-	-	-	+ D 13.00

Compare this with the following table ;

Total apparent myopia without mydriatics up to 30 yrs.	D 193.00.
“ “ hyperopia “ “ “ “	D 13.00.

Sum of absolute myopia “ “ “ “ D 180.00.

Compare this last quantity with the sum of absolute myopia found after the use of mydriatics up to 30 years, and the following results :

$D 180.00 - D 174.00 = D 6.00$ of myopia, to be accounted for as an effect of age or other cause. If the $D 6.00$ of M. be divided by the number of cases, up to this age, 38, or $\frac{D 6.00}{38} = D 0.157$, this calculation reveals an average difference, per case, between the apparent and absolute myopia of but .157 of a dioptric. Hence it may be assumed that removing the influence of apparent hypermetropia, the myopia, with and without mydriatics, will be equal, as appears from the records of the instrument.

Looking at the influence of age, from 12 to 30 years (as shown in the table), in modifying the degree of myopia when this instrument is used, it is seen the well known law is corroborated that myopia diminishes as age increases.

The rule that the *weakest* concave lens which will render the images tangent is the measure of the absolute myopia, is demonstrated by the instrument in many of the cases given in the table. It is believed that in all cases of simple myopia in which the subject is capable of relaxing the ciliary muscle, that such a glass will determine through the instrument the static myopia.

With the instrument, as with concave lenses alone, the patient has the power often of bringing the images of the circle together with a stronger as well as with a weaker negative glass. Thus

in cases 13 and 14 the patient can, when not under mydriatics, cause the images to touch with—D 16 when using the full power of the ciliary muscle; but when that muscle is relaxed—D 12 is *only* required to render the images tangent.

The instrument, therefore, is applicable for measuring the accommodation in many cases, and the strongest,—the weakest concave lens which induces the tangency is the glass which measures this.

What influence does a diseased state of the eye have in developing the degree of myopia present when the organ is under, or not under the effects of mydriatics? This question is shown as follows:

	Without mydriatics.	With mydriatics.	Per cent.
Eyes diseased 12 cases.	D 95.00	D 91.25	96.05
“ healthy, 33 “	D 107.75	D 89.00	82.59
<hr/>			
Total 45	D 202.75	D 180.25	13.46

Thus in those with *diseased* eyes the myopia with (96.05 per cent.), and without (100.00 per cent.), the agency of mydriatics is nearly equal, being only 3.95 per cent. greater; in those not subjected to such agents. In those whose eyes are not diseased the difference is greater under and without mydriatics; or $100 - 80.59 = 17.41$ per cent. in those not subjected to mydriatics.

The presence of disease of the eye in these cases, while not practically interfering with the determination of the degree of myopia, has, therefore, a tendency to render the absolute myopia more readily detected; and the absence of mydriatics to mask a portion of the myopia, in the use of the instrument, in eyes not diseased.

The influence of the several mydriatics employed may be expressed as follows:

Mydriatic.	With mydriatic.	Without mydriatic.	Per cent.
Hyoscine.	D 54.50	D 59.50	91.26
Duboisine,	D 101.75	D 115.25	88.28
Homatropine,	D 7.50	D 11.50	65.21
Atropine,	D 16.50	D 16.50	100.00
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Cases 45	D 180.25	D 202.75	

It is thus apparent that the hyoscine exercised the greater influence upon the accommodation, the duboisine less, the homatropine still less, and the atropine the least, or none at all. The latter result cannot be due to the inefficacy of the agent, but this defect is probably due to the effects of choroiditis present in this class of cases. The result in the case of the homatropine cannot be attributed to disease, so that it is the least potent of the mydriatics.

Practically hyoscine and duboisine are equal in their effects upon the accommodation; and as the former acts more rapidly and its effects pass off sooner, it may be preferred to the latter agent. This conclusion is based upon the cases of the table, but experience with the use of hyoscine corroborates this view.

In general a larger number of cases may change the results formed in these examples of myopia, still they point to the value of the instrument in detecting myopia.

As is well known, hyperopia may mask myopia, the degree so covered is shown as follows:

Case.						Total myopia found after use of mydriatics.
5	-	-	-	-	-	D 1.50
8	-	-	-	-	-	D 1.00
9	-	-	-	-	-	D 1.00
17		-	-	-	-	D 0.75
18	-	-	-	-	-	D 0.75
22	-	-	-	-	-	D 0.50
24	-	-	-	-	-	D 0.50
25	-	-	-	-	-	D 0.50
26	-	-	-	-	-	D 1.25
31	-	-	-	-	-	D 2.50
32	-	-	-	-	-	D 2.25
35	-	-	-	-	-	D 1.25
36	-	-	-	-	-	D 0.75
<hr/>						<hr/>
Cases 13	-	-	-	-	-	D 14.50 = 89.65 per cent.

Thus in the 13 cases showing hyperopia, there is 14.50 dioptries of *absolute* myopia. In the same cases there has been found 13.00 dioptries of hypermetropia. Compare these as 14.50: 13.00 :: 100.00: 89.65 per cent. That is all save 10.35 per cent. of the myopia of *these* 13 cases is masked by hypermetropia.

TABLE.

Number of Cases.	Age of Patient.	Name.	Right or Left Eye.	Mydriatic Used.	Formula	Formula	Sum Maximum of Dioptries of Myopia.	Sum Minimum of Dioptries of Myopia.	Per cent. of Manifest Myopia.	Sum Maximum for Dioptries of Myopia for each class of five years.	Sum Minimum of Dioptries of Myopia for each class of five years.	Class per cent. of Manifest Myopia for each class of five years.	Remarks.
					FOR	FOR							
					DIOPTRICS	DIOPTRICS							
					OF	OF							
					MYOPIA	MYOPIA							
					UNDER	WITHOUT							
					MYDRIATIC.	MYDRIATIC.							
1	12	M. D.	R	Hyoscine	-12.s-2.c 90° r.	-12.s-2.c 90° r.	14.00	11.00	100.00				No disense.
2	12	M. D.	L	Hyoscine	-11.s	-11.s	11.00	11.00	100.00				No disense.
3	14	W. O'B.	R	Atropine	-11.s	-11.s	11.00	11.00	100.00	43.00	41.50	96.51	Choroiditis.
4	14	W. O'B.	L	Atropine	-5.50s.	-5.50s.	5.50	5.50	100.00				Choroiditis.
5	15	C. C.	L	Hyoscine	+1.5s+1.c 90° l.	-1.5c 90° l.+1.75c 0°	1.50	0.00	100.00				No disense.
6	16	D. S.	R	Duboisine	-3.5s-2.75c 85° r.	-3.5s-2.75c 85° r.	6.25	100.00	100.00				Choroiditis.
7	16	D. S.	L	Duboisine	-6.s-1.c 65° r.	-6.s-1.c 75° r.	10.00	10.00	100.00				Choroiditis.
8	17	S. M. C.	R	Homatropine	-2.5s+2.25c 30° r.	-1.s+2.5c 30° r.	1.00	.25	0.75				No disense.
9	17	S. M. C.	L	Homatropine	-2.5s+1.25c 40° r.	-1.s+1.25c 40° r.	1.00	.25	0.75				No disense.
10	17	L. R. C.	R	Duboisine	-1.75s-75c 85° l.	-1.75s+75c 85° l.	1.75	1.75	100.00				No disense.
11	17	L. R. C.	L	Duboisine	-1.75s+75c 85° r.	-1.75s+75c 85° r.	1.75	1.75	100.00	61.00	59.50	96.72	No disense.
12	18	C. C.	R	Hyoscine	-2.s-1.5c 80° r.	-2.s-1.5c 80° r.	3.50	3.50	100.00				Slight corn. scar.
13	20	M. M.	R	Duboisine	-12.s	-12.s	12.00	12.00	100.00				No disense.
14	20	M. M.	L	Duboisine	-12.s	-12.s	12.00	12.00	100.00				No disense.
15	20	A. R.	R	Duboisine	-5.s-76.c 50° r.	-5.s-75c 50° r.	6.25	6.25	100.00				No disense.
16	20	A. R.	L	Duboisine	-5.5s.	-5.5s.	5.50	5.50	100.00				No disense.
17	21	M. F.	R	Duboisine	+1.5s.	-75s.	.75	0.00	100.00				No disense.
18	21	M. F.	L	Duboisine	+1.25s.	-75s.	.75	0.00	100.00				No disense.
19	21	L. N.	R	Hyoscine	-13.s.	-13.s.	13.00	13.00	100.00				Choroiditis.
20	21	L. N.	L	Hyoscine	-11.s-2.c 75° l.	-11.s-2.c 75° l.	13.00	13.00	100.00				Choroiditis.
21	21	L. E. G.	R	Hyoscine	-1.25c 80° r.	-1.s+1.5c 80° r.	1.00	0.00	100.00				No disense.
22	21	L. E. G.	L	Hyoscine	-1.c 90° l.	-5s+1.c 90 l.	.50	0.00	100.00	39.25	33.00	84.05	No disense.
23	22	W. F. B.	L	Homatropine	-7.s+2.5c 50° r.	-8.s	8.00	7.00	87.50				Slight neb. con.
24	23	M. B.	R	Duboisine	+1.5s.	-5s.	.50	0.00	100.00				No disense.
25	23	M. B.	L	Duboisine	+1.5s.	-5s.	.50	0.00	100.00				No disense.
26	25	Z. N.	R	Duboisine	+1.5s.	-1.25c 90° r.	1.25	0.00	100.00				No disense.
27	25	W. H.	R	Duboisine	-1.c 40° r.	-1.c 10° r.	1.00	1.00	100.00				No disense.
28	26	W. H.	L	Duboisine	-2.5c 60° r.+1.c 20°	-2.5c 60° r.+1.c 30° l.	2.50	2.50	100.00				No disense.
29	27	E. H.	R	Duboisine	-25c 55° r.	-5c 55° r.	.50	.25	.50				No disense.
30	27	E. H.	L	Duboisine	-35c 0° r.	-25c 0°	.25	.25	100.00				No disense.
31	28	A. B.	R	Duboisine	-25c 1.5c 90° r.	-2.5c 90° r.	.25	.25	100.00				No disense.
32	28	A. B.	L	Duboisine	-75c 85° l.+1.5c 5° r.	-2.25c 85° l.	2.25	.25	.33				No disense.
33	29	H. J.	R	Duboisine	-10.s-1.c 90° r.	-10.s-1.75c 90° r.	11.75	11.00	93.	49.75	10.00	80.40	Choroiditis.
34	29	H. J.	L	Duboisine	-10.s-1.c 90° l.	-10.s-1.c 90° l.	11.00	11.00	100.00				Choroiditis.
35	30	M. W.	R	Hyoscine	-1.25c 20° r.	-1.25c 20° r.	1.25	0.00	100.00				Choroiditis.
36	30	M. W.	L	Hyoscine	-1.25s.	-75s.	.75	0.00	100.00				Choroiditis.
37	30	N. C. L.	R	Duboisine	-4.5s-2.5c 35° r.	-5.5s-3.c 35° r.	8.50	7.00	.82				No disense.
38	30	N. C. L.	L	Duboisine	-4.5s-2.c 45° l.	-6.s-1.5c 45° l.	7.50	6.00	.80				No disense.
39	31	H. M.	L	Duboisine	-25c 50° r.	-75s.	.75	.25	.33				No disense.
40	35	L. R.	R	Homatropine	+2.5s-25.c 90° l.	-50s.	.50	0.00	100.00	2.25	0.25	11.11	No disense.
41	35	L. R.	L	Homatropine	+1.75s-5.c 85° r.	-50s-5c 85° r.	1.00	0.00	100.00				No disense.
42	43	G. C.	R	Duboisine	-2.25c 90° r.	-2.25c 90° r.	2.25	2.25	100.00	4.50	4.50	100.00	No disense.
43	43	G. C.	L	Duboisine	-2.25c 90° l.	-2.25c 90° l.	2.25	2.25	100.00				No disense.
44	57	T. G.	R	Duboisine	-7.5s.	-1.75s+1.c 50° r.	1.75	.42		3.00	1.50	50.00	No disense.
45	57	T. G.	L	Duboisine	-7.5s.	-1.25s+5c 50° l.	1.25	.75	.60				No disense.
45	1125=Sum of Ages ÷ 45.				Total Dioptries		201.75	180.25	88.90				= Average per cent. D. Myopia.



CONCLUSIONS.

1. That the maximum of apparent myopia is greater in those not subjected to mydriatics, as determined by the instrument.
2. That in many cases the *mydriatic* and *non-mydriatic* myopia are equal.
3. That in many cases of simple myopia, the *accommodative* myopia can be determined with the instrument, and hence the *force* of that muscle ascertained through its agency.
4. That hyperopia may mask a large proportion of the myopia, 89.65 per cent., when mydriatics are not employed.
5. That the pressure of disease in the eyes of the patients in these cases did not seriously interfere with the ascertainment of the myopia present.
6. That an instrument capable of detecting, as an average, 88.11 per cent. of myopia without the use of mydriatics, may be regarded as practically adapted to that purpose.

Finally, it should be stated that in the cases of the table each result obtained from the instrument was compared with the vision found by the use of the test-types, and they were alike in each example.

This instrument is manufactured by Messrs. Geo. Tiemann & Co., 67 Chatham street, New York City.

ZANESVILLE, Ohio, March 22, 1884.

EXTIRPATION OF THE LACHRYMAL SAC.

S. C. AYRES, M. D., CINCINNATI.

The successful treatment of tear-sac troubles requires not only time and patience, but good judgment on the part of the operator. The different cases which one meets require a modification of the treatment to suit the various conditions. The stricture may be high up or far down, near the lower end of the nasal duct, or there may be more than one stricture. There may be considerable dilatation of the tear-sac itself with very slight stricture, or there may be denudation of the bony portion of the

canal, or even a firm bony closure. These considerations, and others including the age and physical condition of the patient, have to be taken into account. In addition there are complications, such as a granular condition of the lids, eversion of the puncta, fistula of the tear sack, and accidental and natural deformities in the bony walls of the nasal duct.

The method generally adopted—that of *Bowman*—will be successful in a large proportion of cases.

It requires time, and the treatment may extend over weeks, or even months. But probing alone does not always answer, and occasionally we derive much benefit from the use of *Stilling's* knife in incising the stricture. This measure seems to greatly facilitate matters, and assists in curing cases where the simple introduction of the probes was ineffectual. The injection of astringents into the tear-sac is of undoubted benefit, and probably is not often enough resorted to. There is a disposition to trust to the influence of the probe on the walls of the lachrymal sac and nasal duct, forgetting that astringents are quite as useful there as in combatting a granular condition of the conjunctiva. The lachrymal sac is undoubtedly often lined with granulations, and from long continued bleomorrhœa its walls become relaxed and distended. In this condition the passage of the probe is often difficult, for it catches in the folds of the mucous membrane. Under these circumstances one inexperienced in operating may pierce the mucous membrane and make a false passage.

A phlegmon of the sac resulting in a fistulous opening may still more complicate matters. If the fistula closes spontaneously, as it most frequently does, there must necessarily be more or less cicatricial alteration in the walls of the sac. If the fistula remains permanently and has a capillary opening, as is generally the case, it is a difficult matter to obliterate its track, even after the stricture is opened.

Cases are met with where there is only a very soft stricture; and yet when from long continuance of the bleomorrhœa there is an enormous dilatation of the tear-sac itself. Here the use of astringent injections is of special advantage.

But where we have a firm stricture of the nasal duct, we have

the greatest difficulties to contend with, and the most unsatisfactory results. Probing is of no avail, and we are therefore limited to a palliative treatment, such as opening the upper canaliculus, pressing the tear-sac out, and treating it by injections.

Various methods of treatment have been devised for the relief of such cases.

Obliteration of the tear-sac has been resorted to by a number of operators, but the results have not been satisfactory, and it is now very seldom, if ever, done. The destruction of the mucous membrane of the sac is accomplished by the use of mineral acids, nitrate of silver, galvano-cautery, actual cautery, butter of antimony, perchloride of iron, etc.

Extirpation of the lachrymal gland has been recommended by very good authority, and its results have been such as to justify a resort to it in extreme cases.

In 1868 *Dr. Berlin* reported some cases to the Ophthalmological Congress at Heidelberg, where he had extirpated the lachrymal sac with excellent results. In this operation he has not had a very extensive following. *Arlt*, in the *Handbuch der Augenheilkunde*, considers the operation very difficult, and in some cases impossible. He states that he had made it a few times, but on account of excessive hemorrhage from the angular artery, had ceased to perform it.

In *Græfe's Archives*, Vol. 27, part 2, is a paper on Extirpation of the Tear-Sac, by *Dr. P. Schreiber*, Assistant in *Græfe's* Eye Infirmary at Halle.

He gives in detail the history of nine cases where he had performed the operation. The results were satisfactory in all, but the hemorrhage was excessive in two or three of them. A strictly antiseptic dressing is applied, and healing by first intention is obtained in most of the cases. His conditions for making this operation are :

1. Very obstinate dakryo-cysto-blennorrhœa with stenosis of the nasal duct, which, although it can still be probed, yet is of such long standing, that there is enlargement and thickening of the walls of the tear-sac.

2. In fistula of the lachrymal sac, especially in cases where

there has been a frequent recurrence of abscesses, and where the skin over the sac and the sac walls have become blended.

3. In old catarrh of the sac, even where the canal is pervious, for it leads to the development of polypoid proliferations from its mucous membrane.

In looking at his cases critically, one might with good reason make objection to some of them, especially cases 3 and 5, where extirpation of the tear-sac was performed in blenorrhœa of only six months standing, and where other measures had not been resorted to. And in more of the cases it seems probable from the histories that other and well known methods of treatment had not been exhausted, before resorting to the somewhat formidable operation of extirpating the sac itself.

The following case is reported as being one particularly suited for extirpation of the tear-sac as other measures had failed to give relief:

Mrs. L., age 32, a healthy, well developed person, had suffered from blennorrhœa of the left tear-sac for fifteen years. The epiphora had been very annoying, and the tear-sac filled every day, but she was in the habit of pressing it out. This gave her only temporary relief, and of late years she had suffered more than usual. She had great difficulty in emptying the sack. The skin over it was in very good condition, and was not adherent or scarred. The distended tear-sac could be plainly seen and felt, but the firmest pressure did not entirely empty its contents. When she turned the eye far upwards the sac seemed to extend downward below the margin of the orbit, and could be felt with the finger. It felt like a diverticulum from the sac, which extended downward, but which in an ordinary examination would have escaped observation. It was only from strong rotation of the eye upward that the outlines of the tumor could be felt. It was decided to attempt to pass a probe, and the ordinary operation was performed after slitting the upper canaliculus. With great difficulty a medium sized probe was passed through the bony stricture. It did not result in any amelioration of her symptoms, except that she was able more easily to evacuate the contents of the sac. With all the pressure she applied (and it was remarkable how much force she exerted when she herself tried

to empty the sac), she was aware that still more remained. Extirpation of the lachrymal sac was recommended as a last resort, and she readily consented. The operation was made under full anæsthesia in the manner recommended by *Dr. Schreiber*. The incision through the skin was fully one inch in length. Its direction was a little outward from the nose, so as to be over the dilated sac. The skin was easily separated from the sac, and the latter was exposed in its entire length before cutting into it. Its walls were very much hypertrophied, and the bottom of this enlarged sac, or more properly diverticulum, was filled with thick pus. The sac walls could, by their color, be very readily distinguished from the other tissues, and were entirely removed by the aid of scissors. The extirpation was as thorough as it could be made, and the sac from its upper extremity down to the nasal duct was cut away. The peculiar dilatation of the sac in this case was probably caused by daily vigorous pressure upon it for many years. There was but little hemorrhage during the operation, and the wound was closed with six sutures. Iced compresses were applied, and the skin healed by first intention. About a week later there was a small opening in the skin, just opposite the caruncle. I pressed a drop of pus out, and then dipped an ordinary dressing probe in pure carbolic acid, and pushed it down until it touched the lachrymal bone. This cauterization served to arrest the suppuration, and in a few days the incision healed over smoothly. I saw her a few months later, and the scar was very slight; indeed hardly noticeable. The relief was all that could be expected.

The diverticulum was pouch-shaped, and measured half an inch in length. Ordinarily it rested behind the rim of the orbit, but when the sac was distended, could be felt when the eye was rotated upward.

In bony stenosis of the nasal duct this operation may be resorted to with reasonable hope of a satisfactory result. It is less formidable than removal of the lachrymal gland, and is more certain of success and less liable to leave an unsightly scar than the use of caustics.

ON THE PROPHYLAXIS AND TREATMENT OF PURULENT CONJUNCTIVITIS OF THE NEWLY BORN.

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The more our knowledge of the origin and nature of a disease advances, the better we are enabled to prevent or to cure it. The truth of this sentence becomes most obvious when we call to our mind the reduction which has taken place within the last few years in the frequency of purulent conjunctivitis of the newly born.

We know that this disease is always due to an infection of the conjunctiva by pus, leucorrhœal, lochial or gonorrhœal discharges. The malignancy of the case varies with the nature of the infecting material; but even a mild case may through lack of proper treatment become malignant, and therefore calls for the utmost attention from the very beginning. As a rule, the most virulent forms are caused by gonorrhœal discharges. In these cases rather large roundish microcci are always found in the discharge; they are easily seen when stained with basic aniline colors. They form characteristic small conglomerations with comparatively large interspaces between the single cocci; frequently they are found lying upon the pus cells. They are therefore to all appearances identical with the micrococci constantly found in gonorrhœa and first described by *Neisser* in 1879, and with those recently discovered by *Robert Koch* in *Ægyptian Ophthalmia*¹.

How these micro-organisms act, further developments must show. The knowledge that in anthrax, erysipelas, chicken-cholera, septicæmia in mice, glanders and some other zymotic diseases, the micro-organisms are the exciting cause of the disorders, renders it probable that the cocci constantly found in purulent

1. In the second report of the German Cholera-Commission, dated Suez, Nov. 10, 1883, KOCH states that he investigated nearly 50 cases of *Ægyptian* eye-disease, and that in the malignant forms thereof he always found a micro-organism to all appearances identical with the micrococcus of the gonorrhœa.

conjunctivitis and in gonorrhœa are also the real cause of these diseases. But in order to prove this conclusively, it is necessary to cultivate these micrococci on serum-gelatine or some other suitable substratum, observing thereby all the stringent precautions necessary to insure complete isolation. If with the microscope we still find the characteristic cocci, described above, in the 5th, 6th or any succeeding generation of micro-organisms thus cultivated, we may prove their pathogenic nature by proper inoculations. Should we be able to produce the specific disease and to find in its secretions the specific micrococci, then and then only would we have proved, beyond a doubt, that the disease in question is caused by these organisms, and it would only remain to show that the coccus of purulent conjunctivitis and that of gonorrhœa are identical. If this is the case, cocci isolated by culture from purulent conjunctivitis should by proper inoculation produce gonorrhœa, and those isolated from gonorrhœal secretions must produce purulent conjunctivitis.

This isolation of the cocci by cultivating them on serum-gelatine has been accomplished in both cases, but the result of the inoculations have not yet been conclusive. The animals experimented upon were not susceptible to the diseases in question and the results have thus far been negative. As far as I know, no experiments have been made on monkeys, and it is to be hoped that these animals, as on a former occasion¹, will prove as good subjects for inoculation as man himself.

Inoculations with the isolated micrococci of gonorrhœa have been made on man and proved successful in every instance; but the number of experiments is too small, and their results have not yet been corroborated by other observers. For this reason they cannot at present be accepted as conclusive evidence².

1. In febris recurrens the inoculation with a patient's blood fails to develop the disease in any animal except the monkey. In 1879 while connected with the hospital for relapsing typhus at Giessen, where a large epidemic prevailed, I had occasion to satisfy myself of the fruitlessness of inoculations on mice, bats, guinea-pigs, rabbits, cats, dogs, sheep and horses, while inoculations made elsewhere on monkeys were successful. The animals showed all the symptoms of the disease and their blood contained the characteristic spirilli.

2. These experiments were made by *Bockhardt*, who inoculated a patient suffering with a fatal cerebral trouble, the result being the development of a typical gonorrhœa three days afterwards. B. repeated the experiment successfully on a number of medical students who volunteered for the occasion.

In the majority of cases the eyes of the newly born are infected during parturition, and more particularly during the passage of the child's head through the maternal vagina. After the rupture of the membranes the head usually descends into the vagina, the os uteri at the same time retracts so that at a certain stage of advanced labor it encircles the child's neck. The eyes of the fœtus, although they are closed, will therefore come in intimate contact with the walls of the vagina and may be infected, if leucorrhœa or gonorrhœa exists. The danger is, of course, greatly augmented if the latter stage of parturition is protracted, or if the child opens the eyes before the head is born, as it may do in cases of asphyxia. All cases of blennorrhœa neonatorum developing within five days after birth are probably due to this mode of infection, while all cases developing at a later period are due to infection post partum.

In regard to the frequency of the disease it may be stated that only a few years ago the percentage of cases of purulent conjunctivitis was much greater in lying-in hospitals than in private practice. In hospital practice at present the disease has been so much suppressed by the general adoption of prophylactic measures, that a marked difference in frequency between hospital and private practice no longer exists. While, however, in a well conducted institution the disease is cured without hardly ever permanently impairing vision, outside of the hospitals a great number of eyes are annually lost for want of rational treatment. In fact most cases of so-called congenital blindness are not really congenital but are due to purulent conjunctivitis.

Our measures against the disease should be taken in two directions :

We should (1) by prophylactic means try to prevent it, and if this fails, we should (2) try to limit it to the affected eye and institute at once careful and well directed treatment.

Prophylactic measures have been employed at all times, but they have until a few years ago been anything but satisfactory. In most of the lying-in-hospitals of Germany, even after the general adoption of antiseptic vaginal irrigations during labor, there have been about 12 per cent of purulent conjunctivitis.

Credé in 1874 had among 323 deliveries 45 cases, or 13.6 per

cent of this affection, and in 1879 still over 9 per cent. From the first of June, 1880, he adopted the following measure in every case, and it must be admitted he met with the most brilliant success. With the aid of a glass-rod one drop of a 2 per cent solution of nitrate of silver (about 10 grs. to ℥i.) was dropped into the eye of the newly born soon after birth. *Credé* states that it is not necessary to evert the lids, as a contact of this solution with the cornea usually causes no irritation. The eyes are, however, cooled for the next 24 hours with linen rags dipped in a 2 per cent solution of salicylic acid. Among the cases thus treated purulent conjunctivitis occurred to the following extent :

1880, among 211 children	-	-	-	once.
1881, " 400 "	-	-	-	once.
1882, " 418 "	-	-	-	twice.

Credé considers all other measures for the prevention of the disease, and especially the vaginal irrigations before and after labor, not exactly useless, but by far not as certain as his own method, because the antiseptic agents cannot be used strong enough¹.

In the lying-in-hospital at Giessen *Kehrer* used prophylactic instillations of a 1 per cent solution of nitrate of silver from 1878 to 1880, at the same time employing frequent vaginal irrigations with 2 per cent solutions of carbolic acid. Still there were from 10 to 12 per cent of purulent conjunctivitis. After *Credé* had published his results *Kehrer* directed me to try the 2 per cent solution of nitrate of silver; but in my hands this method did not prove as harmless as it did at Leipzig, for although I always everted the lids to prevent the solution from coming in contact with the cornea, the instillations were followed by marked irritation and watery secretion, and were therefore soon abandoned. It would appear that in our case the babies could bear a 2 per cent solution of nitrate of silver no better than adults. In 1881 *Kehrer* took charge of the female hospital at Heidelberg, and there gradually developed a prophylactic measure, which to us proved very satisfactory, especially, after he had introduced corrosive sublimate in April, 1882, for almost all pur-

1. Arch f. Gynæcology, XVII, Bd. Hft. I u. XXI. Bd. p. 2.

poses for which in the lying-in department we had formerly used carbolic acid. The frequency of purulent conjunctivitis was now reduced to from 3 to 4 per cent (and at the same time grave puerperal affections became almost unknown). The mode of treatment was the following :

Vaginal irrigations were still resorted to, but 2 per mille solutions of corrosive sublimate were used for that purpose. *Kehrer*, however, considered these irrigations not thorough enough, and ordered that in every case of labor the walls of the vagina and the outer surface of the portio vaginalis should be thoroughly disinfected by wiping them with cotton-balls saturated with a 2 per mille solution of corrosive sublimate in glycerine. In order to insure still greater safety, the eyes of the child were irrigated with a 1 per cent solution of carbolic acid. As *Kehrer* usually places the woman on the side when the expulsion of the child commences, we were in most cases enabled to make these irrigations before the eyes had been opened. Between the expulsion of the head and that of the shoulders there is commonly a marked pause, which usually sufficed for our purpose. In these irrigations the stream should at first be directed against the child's closed eyes to carry off all adherent matter. Then the lids are carefully everted by an assistant, so as to bring to view and to make accessible to irrigation the fornix of the conjunctiva.

These means are very efficient and are decidedly called for in hospital practice, but they are too tedious and to a degree too annoying to make their general adoption desirable in private practice. Here it will generally suffice to cleanse the child's eyes soon after birth with plenty of pure water, which in itself is a very good disinfecting agent. Only in cases of vaginal bleeding, norrhea or in protracted labor we would have to adopt a more energetic course. We should then not only employ antiseptic vaginal irrigations, but also cleanse the vagina with cotton-balls saturated with a strong antiseptic solution. In such cases it would also be necessary to resort to the prophylactic instillations of nitrate of silver, or, what I should prefer, the irrigation of the child's eyes with plenty of pure water to which a little carbolic acid or some other antiseptic agent can be added.

We have thus far only alluded to the means for preventing or rendering harmless an infection at the time of parturition. It now remains to consider the ways for preventing an infection at a later period. At this time the infection may be caused by the lochial secretions or the secretions from the umbilical cord, and the only, but certain, means to prevent this infection is the utmost cleanliness. If the same woman who attends to the mother, washes and dresses the child, she should never touch the child immediately after her hands have come in contact with the genital organs of the mother, or with any sheets, etc., that have been sullied with lochial secretions. She should always wash and dress the child before attending to the mother. A separate sponge and basin should be used for the child's face and a larger basin or a tub for the body, so that no water containing matter formed by the sloughing off of the umbilical cord can possibly reach the child's eyes. If these rules are strictly observed an infection of the baby's eyes after delivery is next to impossible.

When one eye only has become infected it is not an easy matter to keep the other eye free from the disease, and with all precautions we often fail in the attempt. It has been recommended to make use of a protective dressing over the healthy eye, but I have seen little good from such proceeding. It is more advisable not to use any such dressing, but to place the child always on the side of the diseased eye. The cushions should be protected by a piece of oil-cloth over which a piece of linen is spread. If the secretions are, moreover, frequently removed from the inflamed eye, we may hope in this way to limit the disease without losing control over the second eye.

In regard to the treatment of purulent conjunctivitis, I shall only speak of the method employed at the female hospital at Heidelberg. It consists mainly in cauterizations with solutions of nitrate of silver, and in removing the secretions almost as soon as they form, and cold applications. These are best made by placing a number of small linen rags, about two inches in diameter, on a large chunk of ice, and then over the lids. They should not be allowed to get warm, and must therefore be changed at least every two minutes. The cauterizations should not be

made oftener than once in twenty-four hours, and on no account should they be repeated before the epithelium, destroyed by the last application, has been restored. A solution of 1 per cent. is generally sufficient, but if the secretion is very profuse it may be necessary to use a two per. cent. solution. Care must always be taken that the fornix of the conjunctiva is well reached by the cauterization. After each application the eyes should be cooled in the manner described above or with cold water. In order to remove the secretions quickly the eyes should be irrigated every half hour, or more or less frequently, according to the quantity of the discharge. For the irrigations the child is laid on the lap with the diseased eye downwards, the head is fixed by placing one hand on the top of it and the other over the face, the lids are everted with the two index fingers, and a gentle stream of cool water is applied until all matter is carried off. If the fellow-eye must be irrigated too, the position of the child must be changed so as to bring that eye downwards. This treatment is continued until the conjunctiva has regained its normal condition. The cauterizations may be stopped sooner, and mild cases will in fact get well by the use of the irrigations alone.

This treatment prevented permanent impairment of vision in all cases which originated in the hospital, and it was only in polyclinic practice that I had a chance of seeing grave complications of the cornea or even perforation of that membrane and prolapse of the iris; every one of them was due to indifference on the part of the relatives or to the prolonged use of home remedies. These cases were invariably directed to the ophthalmological clinic.

A CASE OF SYMPATHETIC NEURO-RETINITIS. — REMARKS ON SYMPATHETIC OPHTHALMIA.

BY ADOLF ALT, M. D.

I. Gr., æt. 28, came under my treatment on Aug. 28, 1879. His mother stated that he never saw with his left eye. Soon after his birth she had observed that a gray spot was lying behind that pupil, and the family physician had declared it to be a

cataract. When the patient was 8 or 10 years of age, he was operated upon this eye in England, but without apparent success. According to his statement the operator had attempted to make an artificial pupil. A second operation, performed somewhat later on, seems to have been an unsuccessful attempt to extract the cataract. The right eye has always been short-sighted.

The dimness in the lens is said to have gradually spread. A year ago, while the patient was earning his bread as rider in a circus, he observed that the cataract had fallen into the anterior chamber. Without any interference, and without having caused any trouble, the cataract, however, had slipped back again after a few days. About 2 months ago this left eye became considerably inflamed, and at the same time the cataract without any known cause, had again fallen into the anterior chamber, and had since then remained there.

On account of the severe pains in the left eye, and a well pronounced weakness of the right eye he consulted a physician who advised him to have the left eye removed.

When I saw him first the condition was the following: L. E. Moderate hyperæmia of the conjunctival and ciliary blood-vessels. The periphery of the cornea slightly dim and pannous. Near the corneo-scleral margin upwards a very fine linear scar about 7 millm. long is visible. Behind this corneal scar lies a broad artificial coloboma of the iris. The region of the normal pupil is covered by the somewhat shrunken and cataractous lens, which is dislocated downwards and outwards into the anterior chamber and held there firmly as if it had become adherent. V=0; Tn. The ciliary region is very painful on pressure. R. E. Some photophobia. Hyperæmia of the conjunctiva. Slight lachrymation. Fundus perfectly visible and apparently normal. With -16 V= $\frac{20}{20}$. Tn. F. normal.

I proceeded to enucleate the left eye on the same day. The wound healed without trouble.

On the evening of the same day and but a few hours after the enucleation of the left eye, the right eye began to be painful to such a degree that the patient, who evidently was not effeminate, spoke of it as unbearable. This pain came on in attacks

during the following three days with free intervals. When I saw the patient on the fourth day, not having been notified of his condition previously, I found the iris slightly discolored and acting slowly. After having succeeded in dilating the pupil ad maximum, which was comparatively difficult, I found the retinal veins very full and broad.

During the following week the pain disappeared altogether, yet sight grew continually worse, until it was reduced to $\frac{10}{200}$, and about six days after the enucleation the eye showed a well marked neuro-retinitis. The papilla was considerably swollen and its outlines were very indistinct. Veins and arteries were covered by a whitish exudation for quite a distance from their origin, and where the veins were visible they were very full and tortuous. White patches were found also in the periphery of the retina, and near the papilla upwards a striated hemorrhage was visible lying close to a large arterial branch.

The urine was perfectly normal. There was no constitutional disease and no affection of the heart or brain, to which the neuro-retinitis might have been referred. The stump of the optic nerve of the enucleated eye could not be felt, and was, therefore, not in a condition of mechanical irritation.

From the foregoing the case must, I think, be considered one of sympathetic neuro-retinitis.

The patient was kept in a dark room and his pupil under the influence of atropia, and corrosive sublimate (gr. $\frac{1}{10}$ three times a day) was given internally. The infiltration of the retina disappeared gradually under this treatment, the hemorrhage became absorbed, and the optic papilla resumed its normal level. When after four weeks more the patient was discharged, some venous hyperæmia was yet noticeable. Vision was again $\frac{2}{40}$ with -16, the optic papilla did not appear whitish, as I have observed it in several other cases of sympathetic neuro-retinitis.

The enucleated eye-ball was hardened in Mueller's fluid and afterwards in ordinary alcohol.

Aside from the clinical interest attached to this case, the pathological changes in the eye-ball were important enough to be here reported.

I first searched for the scar in the cornea resulting from the

iridectomy, but to my great astonishment I was hardly able to locate it in the microscopical sections, although it had been very easily visible during life. But for an irregularity in the epithelial layers and a few very minute blood-vessels, I could not have found it under the microscope. Neither *Bowman's* layer nor *Descemet's* membrane seemed ever to have been cut. Although I have never before seen such a perfect union after a section which penetrated the whole thickness of the cornea, this case seems to prove that a direct reunion of the wound-lips of *Bowman's* layer as well as of *Descemet's* membrane is possible.

At the height of the artificial pupil the iris tissue was totally wanting and the fibres of the ligamentum pectinatum merged directly into the tissue of the ciliary body. The ciliary processes here were drawn forwards to a considerable degree, even farther than where the insertion of the iris should have been. Near the limbs of the coloboma a small, club-shaped stump of iris-tissue was found. This stump was covered on its anterior and posterior surface with darkly pigmented cells (meridional

sections). The tissue of the limbs of the coloboma appeared hyperæmic and was filled with lymphoid cells.

Another point of interest was the part of the angle of the iris, where during life the cataractous lens had appeared adherent. That it had not really been adherent, was shown by the fact that it had fallen out of this position during the hardening of the specimen.



FIG. 3.

In microscopical sections I found this portion of the angle of the iris to be obliterated by a newly formed tissue, which appeared very similar to the corneal tissue. (See figure 3). This newly formed tissue was arranged in lamellæ, contained a small number of cellular elements, but no blood-vessels. It was, however, lined by a hyaline membrane anteriorly as well as posteriorly (in meridional sections), which was of about half the thick-

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MUCOCELE OF THE FRONTAL SINUS.

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Retained secretions in the frontal sinus give rise to such well-marked clinical phenomena that the diagnosis of this condition is usually a matter of no great difficulty; nevertheless these cases are quite frequently mistaken by the inexperienced in ophthalmic surgery for other and more serious forms of disease. The case described in the following notes was sent to me with the diagnosis: "Tumor of the orbit, probably malignant." This was the verdict of several practitioners who had watched the case from the beginning and made many examinations with a view to discover the nature of the disease.

The patient, Mrs. M., æt. 67, widow of a physician, had been subject to nasal catarrh for thirty or forty years, and some twenty years ago was said to have polypus in the left nostril. For the removal of this she underwent several rather severe operations, and states that some powerful caustics were used, in addition to surgical instruments. Probably the course of treatment will account for the condition of the left nostril, when she came under my notice. About two-thirds of an inch from the orifice a firm cuticular mass stretched across the lumen of the nasal cavity and formed a complete obstruction, excepting a small aperture about

one and one-half lines in diameter, close to the floor of the nostril. Through this a weak current of air and a small amount of nasal secretion could be forced by a strong effort of expiration. The voice was thick and nasal, a peculiarity which had existed for many years.

The mucous membrane of the right nostril was generally thickened, and the nasal secretions somewhat in excess, but no polypi discoverable, though she at times experienced almost complete closure of this nostril also, and is at all times "a mouth-breather."

I may here state that of the five cases of disease of the frontal sinus, which I have seen in the past four years, this one was the third in which polypi of the nostrils were or had been present. In one case both nostrils were completely filled with numerous polypoid masses, which I removed at the time of operating for the cure of a fistula through the upper eye-lid.

The connection between nasal polypi and disease of the frontal sinus, which these cases seem to suggest, is, however, of too obvious a nature to require more than a passing mention. Beyond a certain degree of anxiety and depression of spirits, due to the unfavorable diagnosis and prognosis already alluded to, patient had nothing to complain of, though her breathing at night often caused great annoyance to her friends who happened to be within hearing distance.

Certainly her general health had not suffered from the disease, nor had she suffered actual pain in or about the diseased orbit—nothing more in fact than an unpleasant feeling of fullness which became almost painful when stooping or lowering the head forward.

About a year previously she had first noticed an increased fullness of the left eye, and this had gradually augmented to the condition shown by figure 4.¹ Roughly estimated, the displacement of the eye-ball was one and one-half inch downward, one-half inch forward, and one-fourth inch outward. The movements of the eye-ball, though restricted, especially in an upward

1. The drawings, 4 and 5, were made by the editor from the original photographs furnished by Dr. Buller.

from the normal ophthalmoscopic appearance of the fundus oculi.

A large, ill-defined, elastic, fluctuating mass occupied the inner and upper portion of the orbit. A formation presenting these characteristics and in this situation, of course, at once suggests disease of the frontal sinus. To establish the diagnosis a small trocar and canula was plunged into the most prominent part of and inward direction, were by no means lost, nor was the position of the upper lid such as to deprive the eye of its natural protection. Vision was normal, as might have been inferred



FIG. 4.

the swelling, and when withdrawing the trocar and pressing moderately upon the surrounding parts, a thick, dark grey viscid mucus was forced out of the canula, and at the same time, by using the instrument as a probe, it was found to pass upwards and inward further than could possibly have been the case had the walls of the orbit been intact.

The subsequent method of treatment was in accordance with the recognized principle of draining off the frontal sinus through the nostril. On making a free incision into the swelling an enormous quantity of dark viscid mucus escaped, and an exploration of the inner wall of the orbit with the finger discovered a

very large gap in the inner wall of the orbit, with an extensive cavity beyond, lined with a thick soft mucous membrane. This cavity included the enlarged frontal sinus, as well as a space corresponding to fully half the (anterior) ethmoidal cell. Through the hiatus in the inner wall of the orbit the mucous secretion had forced its way into the orbit, not confined within cyst walls, but as an infiltration into the tissues behind and internal to the eyeball, causing displacement of the latter to the extent and in the manner described. Upon washing out the cavity and pressing the eye gently backward, it resumed nearly a normal position. A



FIG. 5.

free crucial incision was made through the obstruction in the nostril, and a perforation through its roof into the sinus, in the usual way. A perforated rubber drainage tube was passed from below through the aperture on the floor of the sinus, and out through the orbital incision, and a compression bandage applied.

The following day the eye-lids were swollen and tender. There was also nearly the same degree of proptosis as before the operation. After syringing through the tube with a 10 per

cent. solution of boracic acid. lead lotion was applied to the lids instead of the compressive bandage. Under this treatment the inflammatory action gradually subsided, and the patient returned to her home in the country with directions to wear the tube for several weeks, and keep the parts clean by syringing with the same solution. These directions appear to have been imperfectly carried out, inasmuch as she removed the tube a week after she returned home, and allowed the external wound to heal up.

Some eighteen weeks after the operation, as seen by figure 5, the displacement of the eye-ball was still quite appreciable, but was thought to be gradually diminishing. A re-accumulation of the mucous secretion does not seem an impossible contingency, and although no great harm is likely to ensue, should this occur, it is to be regretted the drainage tube was not retained for a considerably longer period. Viewed from the light of my own experience in disease of the frontal sinus, there are several features in this case which seem unusual. First, there was the absence of all inflammatory action during the whole course of the disease; secondly, the accumulation of mucus was unusually large; thirdly, the erosion or absorption of bone which permitted infiltration of the orbit with mucus was much greater than I have ever seen from this cause. Long continued pressure was obviously the cause of this absorption, and if the anterior ethmoidal cells were crowded with the same secretion, the pressure must necessarily have been exercised over an unusually large area, and absorption may have been far advanced over this area before the eye-ball became displaced or the patient aware of her disease.

A CASE OF SARCOMATOUS TUMOR OF THE ORBIT.

DR. H. H. VINKE, M. D., ST. CHARLES.

I desire to report the following case, as it serves to show the benefit to be derived from the extirpation of malignant tumors of the orbit, when the same is complete.

About five months ago I was called upon by my friend, Dr. C. M. Johnson, to see with him A. J., a colored woman of 42, who had been suffering excessive pains for months in the left eye. Upon examination I found considerable exophthalmus; the movements of the eye-ball were abolished. The upper lid was œdematous, and the lower one greatly everted, its conjunctiva being swollen and fleshy in appearance. Vision was completely lost. General condition of patient was poor, pulse small and nearly 100. We diagnosticated a tumor in the orbit, behind the eye, causing the eye-ball to protrude and destroying vision, and decided to operate upon her the next day. The next day, therefore, with the assistance of Drs. Johnson and Morgner, I extirpated the eye-ball and removed, as I thought, the tumor entirely. This tumor weighed about 3v, and evidently sprang from the connective tissue of the orbit. We advised the orbital cavity to be washed out with carbolized water daily, and ordered carbolized water dressings. The tumor, however, rapidly recurred. About a month after the operation I was called to see her again, as she was again suffering considerable pain. I found a large tumor protruding between the eye-lids, filling the entire orbital cavity, and infiltrating the upper and lower eye-lids, especially the lower one, to a considerable extent. I decided to operate upon her a second time. Again being assisted by the above gentlemen, I began the operation by dividing the outer canthus, then making an incision one inch upwards and another two inches downwards, both of these incisions meeting the other at right angles. After dissecting up the lower and upper eye-lids, and turning up the flaps, the tumor was completely exposed, and it was found to be an immovable growth and widely attached to the periosteum of the orbit. The tumor had to be removed piecemeal, and after all that could be gouged out with the scalpel, curved seissors and handle of scalpel had been removed, the orbit was carefully scraped out with a curette, so that the orbit was altogether denuded of its periosteum.

After this the infiltrated portions of the eye-lids were carefully dissected off, so that no remnant of the tumor was left behind. The flaps were now turned back to their original place and stitched.

There was some hemorrhage, which however was readily

checked by the thermo-cautery. The orbital cavity was washed out with carbolized water, and pieces of lint, spread with the chloride of zinc paste, were applied to bottom and walls of the orbit. After both operations there was little or no fever; the pain was always immediately removed after the operations. There was a considerable amount of pus discharged from the orbit for weeks after the second operation, on which account she was directed to syringe out the cavity twice a day with carbolized water. The constitutional treatment consisted of tonics, quinine, iron, etc. I will state here that the tumor, which was removed at the second operation, weighed $3\frac{1}{2}$ ozs. Although four months have passed since the last operation, there has been no sign of recurrence, and I do not apprehend that the tumor will recur, as she is now in the enjoyment of perfect health. I am indebted to Dr. O. Morgner for examining the tumor microscopically, and determining that it was a fibro-sarcoma, the recurrent fibroid of Sir J. Paget.

INJURY. OTITIS MEDIA PURULENTA. RIGHT-
SIDED HEMIANOPIA. AUTOPSY. ABSCESS
NEAR THE GYRUS ANGULARIS
IN LEFT OCCIPITAL LOBE
OF THE BRAIN.

BY ADOLF ALT, M. D.

The following case is of especial interest, on account of its bearing upon the theory of cerebral localization. Authentic cases of this kind are not frequently seen, and have thus far been reported in so small a number, that I think it well to add each single case to the series, as it is observed.

L. S. æt. 49, a robust, healthy looking gentleman came to consult me about his left ear on August 29. 1881. He stated that he had frequently in former years, and especially of

late, suffered from malaria. Within the last two months this had shown itself chiefly in the form of neuralgia in the left side of his head. In consequence of the considerable pain he had been very sleepless. A few days before consulting me he had, as he thought, caught cold in his left ear and accordingly the pain had become yet more aggravated. Quite accidentally he stated also that three months previous he had received a severe contusion on the left side of the head behind the ear, being struck by the heavy curtain-pole of a summer street-car while passing it in another one.

Status praesens.—The left auricle as well as the walls of the external auditory meatus are considerably swollen. No view of the membrana tympani can be had. There is an oedematous swelling over the mastoid. $h=0$. No bone conduction.

I made an incision through skin and periosteum on the mastoid, but found the bone healthy. Then I made two incisions into the swollen tissue of the external auditory meatus. The patient was then ordered to steam the ear. By this treatment he felt greatly relieved, the swelling disappeared in a few days and a profuse discharge from the middle ear set in. Inspection showed now a perforation of the membrana tympani in the lower posterior quadrant.

When under proper treatment, the discharge ceased, the general condition of the patient became again worse. When by steaming the ear the discharge was brought on again, he felt better. Trephining of the mastoid bone was refused. Thus the case went on for about three weeks alternately improving and getting worse. During this time the patient complained sometimes of dizziness, he could walk but slowly, and his memory became affected in such a way, that he "forgot even words" and had often to stop in the middle of a sentence, not being able to find the needed words. There also appeared a small teat-like granulation on the upper wall of the external meatus near the outer orifice. When pressure was exerted on this little tumor a minute central opening at its apex discharged a drop of pus. A probe which I introduced into this opening slid easily in, in an upward, backward and inward direction, without encountering any obstacle and to such a distance, that I

stopped, being afraid of breaking through the dura mater. He again refused the opening of the mastoid.

A few days after this exploration, he complained of loss of sight. An ophthalmoscopic examination revealed no pathological changes in the back-ground of the eyes. The field of vision was, however, greatly restricted for the right side of each eye and in a few days more this condition changed into a complete right-sided hemianopia.

The patient's general condition together with this symptom pointed now to the diagnosis of cerebral abscess in the left hemisphere. Whether this was caused by the injury or by the ear-affection remained undecided.

I did not see the patient again until invited to the autopsy on the 17th of October.

The autopsy (made by Dr. G. Richter with the assistance of Dr. O. Greiner) was obtained with great difficulty, and we were continually interrupted.

We found a large cavity, filled with pus, lying between the dura mater and the cranium just at the site of the injury, and corresponding to it an abscess of the size of an English walnut, barely covered with a very thin coat of cortex, in the substance of the left occipital lobe of the brain and close to the gyrus angularis. No communication apparently existed between the ear and the intracranial pus-cavities.

GLAUCOMA SIMPLEX IN A HYPERMETROPIC EYE AFTER TENOTOMY.

BY J. S. PROUT, M. D., BROOKLYN, NEW YORK.

A man, æt. 54, consulted me June 20. 1872. The right eye converged ordinarily but he could use either eye, at will, for near or distant objects. He wore $+\frac{1}{9}$ for reading and, when not doing so, the eye not in use converged about three lines; when looking at distant objects the right eye converged about $1\frac{1}{2}$ lines. O. D. V. = $\frac{8}{100}$; with $+\frac{1}{9}$ spher. = $\frac{20}{30}$. O. S. V. = $\frac{20}{64}$, with

$+ \frac{1}{20} = \frac{20}{30}$. He said he wished to be able to look people straight in the face, so I agreed to divide the internal rectus O. D., and did so freely four days later, without ænesthetic. As there was good converging power I put in an abducting suture, which, six hours later, was removed on account of pain, when the ball was found to be in good position with very little converging power. Five days after the operation there was a slight tendency to converge. He was strongly urged to wear correcting glasses ($\frac{1}{20}$ spher.) but refused on the ground that his employers would think, if he did so, that he was losing his sight and would dismiss him. Twenty-four days after the operation, as there was more convergence, he seemed half disposed to try the correcting glasses, but did not do so.

1873. January 6.—He said that for two weeks there had been some cloudiness of vision in O. D. External appearance normal, O. D. T. $+1?$ O. S. T. n. V. O. D. $= \frac{12}{200}$, with $+ \frac{1}{20} = \frac{20}{40}$; O. S. $\frac{20}{80}$ with $\frac{1}{20} = \frac{20}{40}$. The ophthalmoscope showed media clear. O. D. disc pearl gray color, cupped physiologically, could not obtain pulsation by moderate pressure. No changes recognized at macula, striped pigmentation in other parts of the fundus. O. S. nearly same general appearances—nerve disc more natural color.

April 14.—O. D. visual field limited up and in, disc pale; moderate pressure caused pulsation.

1875. June 22.—O. D. T. $+1$, upper, inner quadrant of visual field nearly lost, limited in other directions. Disc cupped, arterial pulsations easily produced. O. S. T. n. Visual field normal.

1876. January 8.—Yesterday he had a temporary loss of V. O. D. Now V. O. D. with $+ \frac{1}{20} = \frac{16}{30}$; O. S. V. with $+ \frac{1}{20} = \frac{16}{20}$. O. D. T. $+2$ Nerve disc deeply cupped, atrophic ring (halo) round disc. Advised iridectomy. Refused.

1878. Feb. 27.—O. D. T. $+?$ Eyes externally normal in appearance, has had no pain. O. D. can only see large objects dimly. O. S. T. n., Visual field normal.

March 3—19. Made several instillations of a solution of sulphate of eserine (1 per cent), but without benefit.

1884. March 28.—Both eyes are normal in appearance. O. D.

is sightless. V. O. S. as good as before—not able to make a careful examination. The right eye has at no time been painful nor have there been phosphenes or iridescences.

In view of the fact that the left eye is still good may we assume that the operation had any influence in causing the development of the glaucoma simplex in the right, and equally hypermetropic eye?

A CASE OF RUPTURED ZONULA. LENS CONTINUING TRANSPARENT AFTER THREE YEARS. MYDRIASIS AND LOSS OF ACCOMMODATION. INCREASE OF REFRACTION UNDER INFLUENCE OF MYOTICS.

BY DR. JOHN GREEN, ST. LOUIS.

J. A. J., a farmer, 31 years of age, was first seen by me January 5. 1882. Three years before he had received an injury to the right eye from a blow by a stick of fire-wood upon or in the immediate neighborhood of the organ.

Almost immediately after the injury it was noticed that the right pupil was of about twice the diameter of its fellow, and that it was no longer possible to read moderately fine print with this eye. The dilatation of the pupil and loss of accommodative power in this eye had continued sensibly unchanged.

The pupil presented an apparent diameter of between six and seven millimetres, and did not contract under the influence of strong light or in the act of convergence and accommodation

(with the fellow eye) for the near. $V. = \frac{1.6}{LXXX}$, which was raised to $\frac{1.6}{XXXII}$ by — 1. d. sph. (O. S., $V. = \frac{1.6}{XXV}$): dark rainy day.

Ophthalmoscopic examination revealed a detachment of the lens from the zonula at its upper outer border, with a slight displacement of the lens downwards and inwards. About one-fourth of the free border of the lens was visible through the dilated pupil. The lens appeared perfectly transparent.

A small drop ($\frac{1}{4}$ minim) of a solution of eserine sulphate ($\frac{1}{240}$) contracted the pupil to a diameter of about 2 mm. in the course of about half an hour. At the end of an hour, $M. = \frac{1}{15}$, $V. > \frac{1.6}{XX}$, $V. < \frac{1.6}{XVI}$: sky lighter than at time of first measurement.

January 6.—Diameter of pupil a trifle less than when first seen the day before. $M. = \frac{1}{24}$, $V. = \frac{1.6}{XX}$, (O. S., $Hm. = \frac{1}{4}$, $V. = \frac{1.6}{XVI}$.)

A drop ($\frac{1}{2}$ minim) of a solution of pilocarpine hydrochlorate ($\frac{1}{240}$) was instilled, and twice again at intervals of half an hour. At the end of an hour and a half after the first instillation, the pupil measured about 3 mm. in diameter: $M. = \frac{1}{14}$, $V. = \frac{1.6}{XX}$.

A solution of pilocarpine hydrochlorate ($\frac{1}{240}$) was ordered to be instilled in the evening and again early the next morning.

January 7. 11 A. M.—Pupil dilated about as the day before: $M. = \frac{1}{27}$, $V. = \frac{1.6}{XX}$. The pilocarpine solution was again instilled twice, with an interval of half an hour. An hour and a half after the first instillation the pupil was well contracted.

$$\text{With } -\frac{1}{27} V. = \frac{1.6}{CLX},$$

$$\therefore -\frac{1}{11} V. = \frac{1.6}{XX},$$

$$\therefore -\frac{1}{10} V. = \frac{1.6}{XVI},$$

$$\therefore -\frac{1}{9} V. = \frac{1.6}{XX},$$

Half an hour later, $M. = \frac{1}{11}$, $V. = \frac{1.6}{XVI}$. (O. S. $Hm. = \frac{1}{2}$, $V. = \frac{1.6}{XVI}$.)

January 8.—Diameter of pupil = 5 mm. (O. S., diameter of pupil = 3 mm).

A small drop ($\frac{1}{4}$ minim) of a solution of eserine sulphate ($\frac{1}{240}$) was instilled. The measurements made before and one hour after the instillation were as follows :

Before instillation of eserine sulphate.

Diameter of Pupil=5 mm.

With $\frac{1}{\infty}$ V. = $\frac{1.6}{LXX\bar{X}}$,

“ $-\frac{1}{36}$ V. = $\frac{1.6}{XXXII}$,

“ $-\frac{1}{30}$ V. = $\frac{1.6}{XXV}$,

“ $-\frac{1}{24}$ V. = $\frac{1.6}{XX}$,

“ $-\frac{1}{20}$ V. = $\frac{1.6}{XX}$,

“ $-\frac{1}{18}$ V. = $\frac{1.6}{XXV}$.

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M. $> \frac{1}{24}$, $< \frac{1}{20}$; V. = $\frac{1.6}{XX}$.

One hour after instillation of eserine sulphate (gr. $\frac{1}{240}$).

Diameter of pupil=3 mm.

With $\frac{1}{\infty}$ V. = $\frac{1.6}{CLX}$,

- - - - -

- - - - -

With $-\frac{1}{24}$ V. = $\frac{1.6}{LXIV}$,

- - - - -

- - - - -

With $-\frac{1}{14}$ V. = $\frac{1.6}{XX}$,

“ $-\frac{1}{13}$ V. = $\frac{1.6}{XVI}$,

“ $-\frac{1}{12}$ V. = $\frac{1.6}{XVI}$,

“ $-\frac{1}{11}$ V. = $\frac{1.6}{XX}$.

M. $> \frac{1}{13}$, $< \frac{1}{12}$; V. = $\frac{1.6}{XVI}$.

Increase in R. under influence of eserine=say $\frac{1}{13} - \frac{1}{24} = \frac{1}{28}$;
or $\frac{1}{12} - \frac{1}{20} = \frac{1}{30}$.

January 9.—A solution of pilocarpine hydrochlorate (gr. $\frac{1}{240}$) had been instilled three times during the morning, the last time two hours before the (noon) visit. Diameter of pupil=5 mm., M. = $\frac{1}{20}$, V. = $\frac{1.6}{XX}$. (Rather poor light.)

A small drop ($\frac{1}{4}$ minim) of a solution of eserine sulphate (gr. $\frac{1}{240}$) was instilled, and V. and R. measured after the lapse of an hour; M. = $\frac{1}{15}$, V. = $\frac{1.6}{XVI}$.

An hour later, or two hours after the eserine instillation, M. = $\frac{1}{12}$, V. = $\frac{1.6}{XVI}$.

January 10.—A solution of pilocarpine hydrochlorate (gr. $\frac{1}{240}$) had been instilled three times before the visit, and a stronger solution (gr. $\frac{1}{120}$) was instilled twice during the visit. Good myosis resulted, with M. = $\frac{1}{10}$, V. = $\frac{1.6}{XX}$ (dark day).

January 12.—Several instillations of pilocarpine hydrochlorate ($\frac{1}{120}$), made during the visit, raised M. to $\frac{1}{18}$; a subsequent instillation of eserine sulphate (gr. $\frac{1}{240}$) gave M. = $\frac{1}{10}$, with somewhat less contraction of the pupil than had been noted after the instillations made on previous days.

January 13, 1 P. M.—Instillation of pilocarpine hydrochlorate

(gr. $\frac{1}{240}$) three times before 8 A. M., but not later: V.= $\frac{16}{\text{lxiv}}$, raised by— $\frac{1}{30}$ to $\frac{16}{\text{xx}}$. No myotic was used at this visit.

January 14.—Solution of pilocarpine hydrochlorate (gr. $\frac{1}{240}$) had been instilled the night before and early in the morning, three hours before the visit: diameter of pupil=6 mm; M.= $\frac{1}{27}$, V.= $\frac{16}{\text{xxv}}$.

Instillation of eserine sulphate (gr. $\frac{1}{240}$) contracted the pupil after one hour to 3 mm.

With — $\frac{1}{24}$ V.= $\frac{16}{\text{cxxxvi}}$,
 “ — $\frac{1}{16}$ V.= $\frac{16}{\text{lxiv}}$,
 “ — $\frac{1}{14}$ V.= $\frac{16}{\text{xli}}$,
 “ — $\frac{1}{12}$ V.= $\frac{16}{\text{xxxii}}$,
 “ — $\frac{1}{11}$ V.= $\frac{16}{\text{xvi}}$,
 “ — $\frac{1}{10}$ V.= $\frac{16}{\text{xx}}$,
 “ — $\frac{1}{9}$ V.= $\frac{16}{\text{xxv}}$,
 “ — $\frac{1}{8}$ V.= $\frac{16}{\text{xli}}$.

Increase in R., after action of one instillation of eserine sulphate for one hour, = $\frac{1}{11}$ — $\frac{1}{27}$, = $\frac{1}{18}$.

An hour and a half after these measurements, the pupil having become noticeably larger, M. = $\frac{1}{18}$, V. = $\frac{16}{\text{xvi}}$.

In this case I am certain that the extent of the rupture of the zonula was nearly or quite equal to one-half of its entire circumference, and that, therefore, there could have been no possibility of effective traction upon the lens capsule through the zonular fibres.

The refraction, if assumed to have been originally the same as in the fellow eye, (Hm. =.5 d.) had undergone an increase of about 2. d.; namely, to M. =1.5 d.

Under extreme changes of illumination, and during strong convergence, with full accommodation in the fellow eye, no contraction of the pupil was observed, nor could any accommodative change be detected by carefully directed tests made with the visual axes parallel and under different degrees of convergence for the near.

The instillation of a solution of eserine sulphate (gr. $\frac{1}{240}$) was always followed, although somewhat slowly, by contraction of the pupil (usually from 6 mm. to 3 mm. diameter), and by an increase in

the refraction of from 1.5 d. to 2. d. A similar contraction of the pupil and increase in the refraction were evoked by instillations of pilocarpine hydrochlorate, but more slowly than by eserine, and generally in a somewhat lesser degree.

It seems difficult to avoid the conclusion that in this case the lens, largely detached from its suspensory ligament and insensible to the ordinary stimuli to accommodative change in convexity, had nevertheless retained the power of changing its form under the extraordinary local stimulus of the instillation of a myotic solution. If this conclusion is accepted, it would seem to point to an active contraction of the lens fibres as the essential act in accommodation, thus recalling the views of John Hunter (who erroneously supposed that he had demonstrated muscular fibres in the lens), and of Thomas Young, (who asserted and fairly proved the fact of the increased convexity of the lens in accommodation).

A CASE OF CORECTOPIA.

BY G. M. SMITH, M. D., BLOOMINGTON.

Among the congenital anomalies of the iris there is none, perhaps, so rare as corectopia. The following case (observed in Miss S., æt. 25), came under my notice March 26.

The eccentric displacement of the pupils was very marked and the same in both eyes. The pupils (see Figure 6¹) were situated near the temporal part of the corneo-scleral margin, from which they were separated only by a very narrow strip of iris-tissue.

The anterior chamber was very deep, and the irides being tremulous, I suspected at first that aphakia was connected with the corectopia. Yet, the fact that there was a range of accommodation of eight inches, established, I think, the presence

¹ The pupil lies a little too high in the drawing.

of a crystalline lens. The eyes were hypermetropic 6 D. I had glasses ground with the centre to correspond with the pupils, which were two and three-fourth inches apart.

This correction of the defect of the refractive power was highly appreciated by the lady. She was enabled to read quite



FIG. 6.

easily with both eyes at the same time (? EDITOR), having before been unable to use both eyes together.

It was my wish to make a thorough examination of her eyes, and especially with regard to the condition of the lens, but she would not consent to the use of atropia.

ATROPHY OF THE OPTIC NERVE. MULTIPLE SCLEROSIS OR SPASTIC PARALYSIS. DIFFERENTIAL DIAGNOSIS.

BY DR. H. W. HERMANN, ST. LOUIS, MO.

Atrophy of the optic nerve has often been found in diseases of the spinal cord. It was first and most frequently observed in connection with tabes dorsualis. But other spinal affections

must also be charged with a share in producing this dire complication. It has been reported in a small number of cases of multiple sclerosis. The following case I consider as belonging to the latter class, although it might be taken to be a case of spastic paralysis.

Mr. W., æt. 51, formerly a saloon-keeper, was well until seven years ago, when he suffered from gastritis caused by excessive drinking. Four years ago he had constant headache and occasionally a high temperature, attacks of dizziness and "crises cardialgiques."

Sight began to fail at about this time. Subsequently he had superficial gangrene of the toes.

On May 27, 1881, (examination by Dr. Alt), he presented myosis, atrophy of both optic nerves. $V_{\frac{20}{60}}$. Visual field concentrically narrowed in both eyes. Color perception normal.

On August 3, 1882, when he came to me for examination, his condition was as follows: Well nourished man, face florid, perspires easily, except over lower extremities, digestion fair, irritability of bladder, mentally slow, speech heavy though not scanning, occasional headache, pupils react on light, myosis.

Tendon reflexes increased, also skin reflexes. Sudden noise also excites reflexes. Formication and pain in extremities, lower extremities feel cold and numb. Sensibility to touch diminished in legs. Left leg is slightly paretic. Can only walk badly without a cane. Some muscular rigidity. Right planta painful on pressure in some spots. Feet become livid after standing a while. Skin over little toe of right foot thin; on second toe signs of beginning gangrene.

In May following, gangrene of the skin of the great toe of the left foot took place which granulated over in six weeks, and was exquisitely painful, causing sleeplessness and occasional delirium. In March, 1884, two other toes were affected in a similar way.

March 23, 1884.—Dr. Alt again examined the eyes and found myosis; pupils contract, however, slightly on strong light as well as on accommodative effort. $V = \frac{20}{60}$. Field the same as three years ago. Atrophy of the optic nerves also the same.

Reads some letters of Jaeger 15. Color-sense normal. Slight paresis of the rectus internus of right eye which causes him to reach beyond objects on left side. The other symptoms are nearly the same as above described. Tremor is not very noticeable. The mental impairment is increased. Slight ataxia; tendon reflexes increased.

In this case the atrophy constitutes a very prominent symptom; but from its appearance alone we could not make the differential diagnosis between the various organic diseases which may produce it. Only when taking the degree of functional disturbance, the history, and the other symptoms in consideration, can we make an exact diagnosis.

The muscular rigidity and increased tendon reflexes point to spastic paralysis, (sclerosis of the antero-lateral columns). But these symptoms often occur also in multiple sclerosis and are only slightly developed in this case. Moreover, atrophy of the optic nerve has never been observed in spastic paralysis. As a further means of distinction we have the bladder symptoms, the mental degeneration, anesthesia and the gangrenous patches on the toes.

We may consider the alcoholic excesses to be an etiological moment in the production of the sclerosis, as we know that chronic alcoholism gives rise to arterial degeneration, though this by itself would not suffice to explain all the symptoms in this case. Why atrophy of the optic nerve should occur in spinal affections is a mooted question as we know of no direct connection between the optic nerve and the spinal cord.

The cilio-spinal centre, situated in the height of the last cervical and beginning of the first dorsal vertebræ, communicates indirectly by means of the sympathetic nerve with the iris; but no direct connection has yet been proven for it with the optic nerve.

In affections of the meninges the changes in the optic disk may be easily explained by the contiguous inflammation of the optic sheaths or by an increase of the cerebro-spinal fluid which then mechanically interferes with the circulation of the retinal vessels, as has been proven experimentally by M. W. af Schul-

ten,¹ and others. In these cases the atrophy is secondary to the circulatory complication.

When any brain symptoms are manifest in multiple sclerosis, it is convenient to assume a patch of sclerosis in the optic nerve or tract, but this is not always found to be the case, and we must hope that future developments will disclose to us the paths of this connection between the optic nerve and spinal cord which evidently exists.

NOTES ON STRABISMUS.

DR. S. C. AYRES, CINCINNATI.

The development of convergent strabismus independent of paralysis or paresis of the abductors in the adult is a matter of rare occurrence. We are all familiar with strabismus as it is generally seen in children. We form our own opinions as to its causes independent of the so-called cause assigned by the parents. Such cases are usually tested to ascertain the refraction, or it is estimated with the ophthalmoscope if the child is young. The tenotomy of one or both muscles is made and proper correcting glasses are ordered, if they are required, and we have done all that is indicated. The majority of all cases of squint develop from the second to the seventh year although there are a few where it is congenital or develops within a few days after birth. The theory that hypermetropia is the cause of squint has for years been generally adopted, but it is not entirely satisfactory in this that it does not explain why many more hyperopes do not suffer from squint.

The importance of anomalies of refraction cannot be denied and yet we must conclude that the value of anomalies of the *muscles* has been underestimated. Prof. H. D. Noyes in his work on "Diseases of the Eye," says that Donders regarded "converging squint and hypermetropia as standing almost universally for cause and effect." But he adds "large observation has

1. Experimentela och kliniska undersøkingar betr. hærnskador och deras inflytande på ögats cirkulationsförhållanden. Helsingfors.

modified these views, and while we find that hyperopia acts the most important part in the production of converging squint, we have many statistics to show that essential muscular defects are also operative." Prof. Schweigger has antagonized the generally adopted theory of the importance of *H* and gives extensive statistics to show the importance of insufficiency of the external recti, or as he terms it, elastic preponderance of the internal recti muscles in producing strabismus. It is in the experience of every observer that the highest degrees of *H* are not most frequently associated with squint, but on the contrary the moderate degrees. We also frequently see cases of amblyopia congenita where there is no squint and where the good eye has a slight or even a high degree of hyperopia. In the following case there was a high degree of *H* (8 D.) and one eye was very amblyopic and yet squint did not develop until the twentieth year.

CASE I.—Miss S. S. æt. 20. Complained of asthenopic symptoms and was tested under duoboisia and found to have $H=8\ D$ R. E. V.=04. The left eye was very amblyopic but was not convergent. She was ordered $+4.5\ D$ for constant use. About six months afterwards (in February, 1881), she returned with the report that she could not use her glasses, and that for two or three weeks she had been seeing double. The diplopia was so annoying that she could not attend to her business, which was that of a saleswoman. Examination showed that there was a slight convergence of the left eye. She stated that it had developed gradually and was now a fixed condition, and that she could no longer retain her position in consequence of the annoyance of the double vision. The visual acuity of the right eye was found to be about as it was when previously examined. There was no known cause for the development of the strabismus as she had received no injury of the head, and there was no paresis of the left abductors. She was kept under observation about a month and then a tenotomy of the left internus was made. The diplopia was at once relieved and she was ordered $+5. D$ for constant use. It is now three years since the operation was done and there has been no difficulty in using her eyes. She wears her glasses constantly.

CASE II.—Development of strabismus with annoying diplopia. J. D. B., æt. 29, has convergent strabismus with a most annoying diplopia which prevents him from attending to his business. These conditions developed about six years ago. At first the diplopia was not constant, but gradually it became a fixed condition and now renders his life very uncomfortable. He can neither blend the two images nor ignore one of them. There is permanent contraction of the right internal rectus muscle and the only chance for relief is in a tenotomy. This was done by Dr. E. Williams with very satisfactory results. The diplopia was relieved and he resumed his business and was enabled to use his eyes comfortably.

The visual acuity of the eyes was not noted.

CASE III.—Traumatic strabismus—caused by an operation for Dacryocystitis.

Miss C. æt. 26.—Applied for treatment in consequence of a very annoying diplopia from which she had been suffering for about three months. She gave the following interesting and unique history.

Three months ago she submitted to an operation for dacryocystitis of the left side. It was extremely painful and the operator was a long time in doing it, and judging from what she said, it was done in a bungling manner. The tissues in and around the inner canthus were very much bruised and considerable swelling and tumefaction followed.

She says she saw double immediately after the operation. This did not subside with the local swelling but persisted up to the time of examination. The images were harmonious and it was impossible for her to blend them. There was a marked contraction of the internal rectus of the left eye, but vision was perfect, as was that of the right eye. A tenotomy of the left internus was proposed to which she readily consented. The tendinous insertion of the muscle in the sclerotic was severed close to the sclerotic, care being taken not to incise the capsule of Tenon more than was absolutely necessary. The diplopia was immediately relieved and she shortly returned home. Two years and a half have now passed since the operation, and so far there has been no return of the trouble.

CASE IV.—Strabismus following an abscess of the upper lid.

Mr. A., æt. 37, suffered from an abscess of the upper right upper lid, about four months ago. There was marked swelling and œdema of the upper lid and for a while the eye could not be opened. Poultices were applied and in time the abscess was opened. The swelling gradually subsided and the lid resumed its normal appearance. In consequence of the inflammation he kept the eye bandaged for several days. When he removed the bandage he found that he saw everything double. He tried in vain to walk around and attend to business with both eyes uncovered and was finally compelled to wear a patch of black silk over the right eye. He waited, hoping that the visual disturbance would disappear in time, but as it did not he applied for relief. The eyes tested separately were about equal and there was no fundamental lesion. There was a permanent contraction of the right internal rectus and he was advised to submit to a tenotomy of the muscle as the only means of relief. The operation was done in the ordinary way and the results were as immediate as they were satisfactory. The diplopia was relieved and he was restored at once to binocular vision.

TWO CASES OF DOUBLE, CONGENITAL, SYMMETRICAL ECTOPIA LENTIS IN SISTERS.

BY B. E. FRYER, M. D., U. S. ARMY, FORT LEAVENWORTH, KANS.

Cases of that form of incompleteness or irregularity of development of the eye, ectopia lentis, though not uncommon, are sufficiently rare when occurring in two children of the same family as to merit reporting.

CASE I.—Josephine Vogel, aged seven years (born in Nashville, Tenn., March 24, 1875), was brought to my office, August 27, 1882 by her father. The child was rather small for her years, but seemed well nourished and quite intelligent. Her vision in both eyes was $\frac{20}{200}$. On dilating the pupils it was found that ectopia lentis existed in both eyes, the lenses being directly outwards towards the temples, the extent of the malposition, as

compared with the natural site, was more than half the diameter of the lens. This position was similar in both eyes, and both lenses were alike in not being free from a slight cloudiness. With +6 the child was able to read the short words in No. 3 of Snellen at eight inches without much difficulty. The eyes were of normal size.

On describing the condition to her father he said his younger child also had difficulty in vision, and on September 3. 1882, he brought her to my office.

CASE II.—Wilhelmina Vogel, born in Nashville, Tenn., September 16. 1877, therefore nearly five years of age. The child was delicate and small for its years. The pupils being dilated with atropia I found that the lenses in both eyes were placed symmetrically upwards and outwards about 45° , the extent of the malposition being one-half the diameter of the lens. The child being but five years old no satisfactory examination of visual acuity could be made. Gave +8 glasses.

Both of these cases have since been lost sight of.

DOUBLE CONGENITAL ZONULAR CATARACT IN AN
INFANT FOUR MONTHS OLD, IN WHICH BOTH
ATROPIA AND DUBOISIA PRODUCED BUT
SLIGHT PUPILLARY DILATATION.

BY B. E. FRYER, M. D., U. S. ARMY, FORT LEAVENWORTH, KANS.

Mr. and Mrs. A. Gay, of Concordia, Kansas, brought their baby to my office, February 25. 1884, in reference to its eyes. The child was a healthy looking boy of four months of age, well-nourished and developed, and in good health. Both parents healthy, the father especially so. No specific taint on either side.

The child's eyes were of normal size; slight convergence of axes existed, and occasionally nystagmic movement of the eye-balls. The irides, which were bluish gray, appeared perfectly natural and healthy, and though the pupils were somewhat small they responded to the effect of light. Both lenses had zonular

cataract in them, with a slight eloudiness beyond the opaque zone.

The day the child was brought to me I pencilled the conjunctiva of the lower lid with a freshly made solution of atropine (one grain to one ounce of water) several times, and also dropped on the everted lower lid a drop or two, and again repeated the pencillings making several applications in the morning from 9 till 2. In about half an hour from the first application of the atropia there was a dilatation of the pupil not amounting to more than two and a half millimetres. This was a little over a millimetre of dilatation. The application of the atropine was continued on the following and also on the third day, but with no greater effect. The atropine solution was a freshly made one, and one I was using in other cases with maximum effect upon the pupil.

I determined to try duboisia on the fourth day, and had a solution made of that alkaloid (one grain to one ounce) from some of Merk's manufacture. I used this as I had the atropia and continued it three days, but no further dilatation of the pupils was obtained than that had on the first day's use of the atropia. On this I directed the parents to take the child home and to pencil the conjunctiva of the lower lid each day with the atropia solution and to bring the child to me again in one month.

On April 12. last, the child was brought again to my office and the mother stated that there had been no greater enlargement of the pupil during the interval than before, and for a few days no application of the drug had been made, and its effects at this time had completely subsided. I now had an opportunity of again examining the child's pupils free from atropine, and also while it was asleep, during which latter the pupils were contracted to a small pin's head in diameter, enlarging to nearly a millimetre and a half on waking. I now again began the use of the atropia solution in the same way as before, instilling drops more frequently perhaps. I continued this two days. The result was the same as at first, viz.: A pupillary expansion of a trifling over two and a half millimetres. I then resorted to the duboisia again for the same time, but with no further improvement in the size of the pupils, though the mydriatics had been pushed to the production of a constitutional effect.

The enlargement of the pupils slight as it was, was equal in extent in both eyes, and was symmetrical and both pupils were circular at all times.

That there were no synechiæ to interfere with the pupillary expansion would appear from the complete pupillary contraction during sleep; from the circular form of the pupils, both when contracted and also when under the effect of the mydriatics; and from the fact that there was no evidence of any iritic inflammation and no sign that it had occurred, the irides appearing perfectly normal in every respect. Examination was made by oblique light and with the ophthalmoscope.

The child's perception of light was apparently moderately good, the eyes following the movement of bright objects and closing the lids on the approach of opaque bodies to the eyes.

The case is reported with the hope of bringing to record similar ones; the condition being of interest, presenting as it does an element of difficulty in any operative procedure adopted for the removal of the obstruction of the passage of light to the retina. I cannot offer any satisfactory theory to account for the cause of the condition which probably ultimately depended on a rigidity of the muscular fibres of the sphincter pupillæ, which neither of the mydriatics used were sufficient to overcome.

A CASE OF SYMPATHETIC NEURO-RETINITIS. REMARKS ON SYMPATHETIC OPHTHALMIA.

BY ADOLF ALT, M. D.

[Continued from No. 1. page 32.]

I think the following supposition will explain in the simplest manner how these conditions could come about: An inflammatory process in the angle of the iris having given rise to the formation of new connective tissue, this gradually grew forwards between the fibres of the ligamentum pectinatum, and thus split *Descemet's* membrane in two halves.

A small fold of iris-tissue was attached to the hyaline membrane lining the newly formed tissue, and was considerably stretched. The iris-tissue as a whole was filled with lymphoid

cells, many of which contained a number of pigment molecules. A great deal of pigment was lying free in the tissue, while the stellated pigmented parenchyma-cells of the iris were wanting almost altogether. The few blood-vessels which could be seen in the iris were hyperæmic.

The tissue of the ciliary body was largely infiltrated with round-cells in its anterior portion. On the inner surface of the ciliary body some of the torn fibres of the suspensory ligament of the lens were visible. The fibres of the ciliary muscle ran nearly all in a longitudinal direction. The blood-vessels were hyperæmic.

In spite of the dislocation of the lens and in spite of the obliteration by the newly formed tissue of the communication between the anterior chamber and the drainage system in the scleral tissue no glaucomatous symptoms had ever been observed in this case. This was surely not due to the iridectomy.

The ciliary nerves which I examined with especial care showed no pathological changes.

The choroid was normal and there was no posterior scleral staphyloma.

The optic nerve was destroyed by hypertrophy of its connective tissue and atrophy of the nervous elements. There was also diffuse atrophic retinitis. Most of the retinal blood-vessels were obliterated; of the remaining ones some were empty, some hyperæmic. The internal limiting membrane of the retina was detached from the latter in a number of places by a gelatinous exudation.

The lens-capsule was intact; some torn fibres of the suspensory ligament were attached to its equatorial parts. The capsule was wrinkled, the lens shrunken. The pyramidal cataract lay near, but not exactly in the anterior pole of the lens. It was irregularly shaped, not cone-like as usual, but rounded off and thicker at its apex than at its base. It consisted of connective tissue arranged in lamellæ void of cellular elements. Near the base this tissue contained a large quantity of lime, as did the anterior part of the lens. The capsular epithelium had disappeared. The remainder of the lens was in a state of regressive metamorphosis.

The fluid vitreous body contained a number of flocks consisting of fibrine and young connective tissue.

Remarks. The remarks I intended to make in connection with this case have quite unexpectedly received another direction than the one I had in mind.

In the March number of the Archives of Ophthalmology Dr. Theobald, of Baltimore, has done me the favor of kindly reviewing my statistics on sympathetic ophthalmia (reported in 1876 in the same archives) in a paper he entitles: *Some recent theories regarding the pathogeny of sympathetic ophthalmia, viewed from a macroscopic standpoint.* I have never taken up a literary fight, nor do I intend to now; yet the manner in which Dr. Theobald expresses himself is such that I cannot remain silent, limiting myself, however, to the following statements which will cover all I shall have to say in this matter. I shall simply correct my own mistakes and what is wrongly reported, or willingly or unwillingly distorted by Dr. Theobald, in order to prove his subject. Thus I hope to help in saving the advance in strict knowledge which has been made within the last decade in regard to the pathogeny of sympathetic ophthalmia from being lost again through statements from a "macroscopical standpoint," which come from a gentleman who would think it as much of an offense to have his veracity and earnestness in search after scientific truth doubted, as I do.

His first statement is that my statistics actually refer to 112, not 110 eyes, as I stated. This point might appear well taken, yet I did not include in the statistics two eyes, which had been removed for sympathetic keratitis, as I considered them (see page 475) doubtful, to say the least.

In my tabular statement the ciliary nerves are mentioned in 45 cases, not as I had erroneously stated, in 43. In 7 of these cases they were pressed upon by exudation or entered into the tissue of the scar, without any apparent change of their nervous elements.¹ What right Dr. Theobald has to count these as cases in

1. In the translation of my paper, which I had written in German, an error occurred, which I did not notice at the time. In the case of *A. Prichard*, table 1, fifth page, a ciliary nerve is mentioned as being *much torn*, this ought to read: *one considerably stretched or dragged upon* (gezerrt).

which the ciliary nerves showed pathological changes I cannot perceive. In 6 cases only there were distinct histological changes visible in the tissue of the ciliary nerves and in 1 case they were "not discoverable," that is they had been destroyed in the inflammatory process and thus had surely undergone pathological changes. This means that the tissue of the ciliary nerves was found to be, or to have been, diseased in 7 cases of the 45, or in 15.5 per cent. Or, take the 112 eyes, then the ciliary nerves have been mentioned 46 times and been found pathologically changed 8 times = 17.3 per cent. and not as he will have his readers believe in 32.6 per cent. being very careful to state, that he did not think it necessary to carry the fractions beyond the first decimal. The "gross pathological changes" do not belong here.

In my tabular statement the conditions of the optic nerve and retina are mentioned in 85 cases, and that would mean, as their *normal* condition is never mentioned, that in 100 per cent. of the cases in which their condition is stated this was pathological. Thinking this wrong¹ I calculated the percentage, as if the condition had been stated in all eyes, which would make 77.2 per cent. or, for 112 eyes, in which the optic nerve and retina were mentioned as pathologically changed 86 times, in 76.7 per cent. Optic nerve and retina are one organ, as much so as choroid, ciliary body and iris are one organ: the uveal tract. No change in the one part can exist long without affecting the other part of one of these organs. Therefore, I most logically counted the affections of the optic nerve and retina (optic nerve, or retina, or both) as the affections of one organ. If Dr. Theobald had examined many such eyes with detachment of the retina, he would know that this "gross change" involves also histological changes in almost every case. As he evidently has not, it is not strange that through his spectacles my statements should appear as "*most grossly misinterpreted pathologico-anatomical observations.*"

But now to the main point. Dr. Theobald honors me by giv-

¹ I have no doubt that retina and optic nerve were examined in every case, although this is not stated, while I seriously doubt that the ciliary nerves were examined especially in all the cases I had found in the literature on this subject.

ing me credit for having initiated a new movement in the theory of the pathogeny of sympathetic ophthalmia. Be it so or not—surely the theory of transmission of the inflammation from one eye to its fellow by means of the optic nerve alone, was not the conclusion I came to in the paper against which he militates. The conclusion there (see page 475) is, “*That the entire nervous apparatus of the diseased eye participates in the transmission of the affection to the other.*” Moreover, in a paper written in 1878, (which Dr. Theobald knows, as he refers to it) on the condition of the ciliary nerves in an eye suffering from purulent panophthalmitis, enucleated on account of sympathetic iritis, I stated again, “*that this is ONE of the ways in which sympathetic affections may be brought about, i. e. by direct transmission of the inflammation, scil. by way of the optic nerve.*”

I cannot help feeling honored by the remarks of Dr. Theobald, although they were intended quite differently. Yet the honor is really due to the gentlemen who, since my paper appeared, have found themselves in the position to claim that the optic nerve and its sheaths alone transmit the inflammation from one eye to the other in sympathetic ophthalmia, while sympathetic irritation is simply a reflex-neurosis. I here refer especially to *Knies, Leber and Deutschmann*.

In thus defending the statements made in my paper in 1876, I do not wish it to be understood that I am to-day of the same opinion as at that time. On the contrary, I intend to state, that my position in this question to-day is the one expressed by *Knies* in his paper on sympathetic ophthalmia in “*Beiträge zur Ophthalmologie als Festgabe, Friedrich Horner, etc., gewidmet. Wiesbaden, 1881,*” which Dr. Theobald has evidently no knowledge of. I do, however, not consider sympathetic ophthalmia to be simply “a sero-plastic uveitis,” as my friend *Knies* does. With this exception, *Knies* says there: “*The symptoms of so-called sympathetic irritation are reflex-neuroses in the sphere of the motor, sensorial and vasomotor functions and by way of the ciliary nerves.*” Further on he states: “*The sympathetic inflammation is an inflammation (sero-plastic uveitis) which travels from one eye to the other along the optic nerve and its pia mater sheath by way of the chiasma.*”

Of course, the direct anatomical proof is as yet wanting for this theory, because, if it was not wanting the question would be no longer subject to theories. Yet, the theory of transmission by the ciliary nerves has only an extremely small anatomical support, while excellent clinicists and microscopists have many times tried to find direct proofs of this theory and have failed to do so to their own dismay. It has appeared to me just as strange that Dr. W. C. Ayres was able to find pathological changes in the ciliary nerves in every one of his seven cases (Arch. of Ophth. Vol. X), as it is to Dr. Theobald that I found these nerves normal in fourteen out of fifteen cases which I examined and in which the eyes had caused sympathetic irritation. (By using his own method of thought he ought here to have said, that I found the ciliary nerves normal in twelve out of fourteen cases in which I mentioned their conditions. As he wants to show my inaccuracies, he ought to be more accurate himself).

It is impossible to refute his further assertion "to the pathologists of the Cohnheim school" that reflex-congestion will lead to inflammatory changes, in any other way here, but by stating my equally firmly rooted conviction that reflex-congestion never yet has caused inflammation. On the other hand, when Dr. Theobald (page 80), in order to prove an influence of "trophic" nerve-fibres upon the production of sympathetic inflammation, cites the ulcerative keratitis, which (though with reserve) is called neuro-paralytic, occurring after division of the trigeminus nerve, he forgets that such a keratitis would be primarily a *necrosis* and not an active inflammatory process, in other words he does not prove anything by this simile.

Being greatly interested in this, one of the most important, subjects of ophthalmology, I have given it special time and observation, and, induced by a remark made by Dr. Williams, of Cincinnati, at the meeting of the International Congress of Ophthalmology, (see report page 45), in 1876, who stated that he found active neuro-retinitis in two eyes he enucleated after serious injuries, I carefully examined a number of injured eyes with the ophthalmoscope as soon as possible after they had been injured; and I find by referring to my books, that in five cases of severe injuries in which an ophthalmoscopic examination was possible there

existed, in periods varying from a few days to three weeks after the injury, a decidedly well-marked neuro-retinitis with tortuousness of the retinal veins.

The fact that we usually see the first signs of sympathetic ophthalmia appear in the anterior portion of the uveal tract is, therefore, no proof against the theory of direct transmission of such a traumatic neuro-retinitis from one eye to the other, because we do not, as a rule, see the cases early enough in order to diagnosticate such a possibly existing neuro-retinitis in the sympathetically affected eye. That some observers have seen similar conditions is, however, proven by the statement of *Dr. H. D. Noyes* (see page 47 report of the International Ophthalmologic Congress in 1876) who says: "*I have been accustomed * * * to lay great stress upon the peculiar delicate infiltration and haziness of the optic nerve of the eye*" (meaning the in eye danger from sympathy). As the first affected eye usually shows an affection of the uveal tract, such inflammation may be, and probably usually is, transmitted at the same time as the neuritis, by means of the optic nerve sheath (see my paper on sympathetic neuro-retinitis, the same report page 37).

Yet, after all, it will be impossible to convince an antagonist of being wrong by theorizing merely, nor is anything to be gained, until the microscope (not the macroscopic inspection) has revealed the real condition of things. *Deutschmann*, therefore, has made a number of experiments with a view to produce sympathetic ophthalmia. He has been (see Graefe's Archiv. xxviii, page 291) thus far successful in producing "sympathetic papillitis" and has demonstrated it anatomically. His paper also does not seem to have come to Dr. Theobald's knowledge and I take great pleasure in inviting his attention to it.

Experimenting in the same way on rabbits I have after numerous failures succeeded in producing a severe traumatic inflammation in one eye, which on the third day was followed by a well-marked iritis in the fellow. I had the honor to demonstrate this rabbit before the society of German physicians of St. Louis (Verein Deutscher Aerzte). If, as I think, since rabbits are, as far as I know, not especially apt to suffer from idiopathic iritis, this was actually a "sympathetic" iritis, the question will

be brought nearer a settlement by an examination of the eyes and nerves taken from this rabbit. On this I shall report in the next number of this journal.

[TO BE CONTINUED.]

CORRESPONDENCE.

The following letter was received from Dr. S. M. Burnett, in Washington, D. C.

* * * In reply to the communication of Dr. Coggin, in the last number of the AMERICAN JOURNAL OF OPHTHALMOLOGY, I would say, that I prepared three years ago for the National Board of Health, a nomenclature of ophthalmology and otology, which was published in a supplement to their Bulletin.

I did not know but that you might wish to republish this (with revisions) in your journal. If so, I will send you a revised copy for examination.

[The editor has asked Dr. Burnett to kindly forward this revised nomenclature, and hopes to be able to republish it in the next number of this journal.]

CORRIGENDA.—NO. 2.

Page 35, the 8th, 9th, and 10th lines should be the 1st, 2nd, and 3d.

Page 52, 20th line from below read $V = 0.4$, instead of $V = 04$.

Page 53, 11th line from below read *homonymous* instead of *harmonious*.

Page 54, 2d line from above read *right* instead of *upper right*.

Page 57, 1st line from below read *lymphoid* instead of *hymphoid*.

Page 58, 16th line from above read *glaucomatous* instead of *glancomatous*.

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AN OPERATION FOR THE REMOVAL OF THE EYE-BALL, TOGETHER WITH THE ENTIRE CON- JUNCTIVAL SAC AND LID MARGINS.

BY DR. JOHN GREEN, OF ST. LOUIS.

Three of the cases now reported were mentioned in a verbal communication made to the American Ophthalmological Society at the meeting of 1882. With the exception of a short abstract which appeared in the following number of Knapp's Archives, no report of them has been published.

In several cases of granulation of the eye-ball, and of partial or total evisceration of the orbit, involving extensive loss of conjunctiva, it has appeared to me judicious to excise the whole conjunctiva, together with the tarsal tissue and the cilia-bearing lid margins, thus preserving large flaps from the very extensible skin and muscle layers of the lids to cover in the cavity, left by the operation and avoiding the subsequent annoyance resulting from the preservation of a useless amount of the conjunctival sac.

The first of these cases was that of a young farmer who had suffered for several years from a malignant ulcer of the inner canthus, which had largely destroyed the conjunctiva on the nasal side of the cornea, together with nearly one-third of the tarsal tissue of both lids. The function of the internal rectus muscle was abolished, and there was a deep cavity extending backwark nearly to the equator of the still intact eyeball.

Judging that it was impracticable to save the eye-ball, or a sufficient amount of lid tissue and conjunctiva to admit of the wearing of an artificial eye, I decided to perform enucleation and to combine with it the removal of the lid-margins, the tarsal tissue and the entire conjunctival sac. I was assisted in the operation by Dr. H. H. Mudd.

The diseased tissue at the inner canthus was cut freely away within a curved incision carried down to the bone, and the two ends of this incision were extended through the skin and muscle layers of the upper and lower lid along the ciliary margin. The skin and muscle were then dissected from the tarsal tissue as far as the upper and lower borders of the orbit, and the tendon of the levator palpebrae superioris was lifted on a strabismus hook and divided. The tarsal tissue was then seized with hooked forceps and drawn forwards, and the whole conjunctival sac was dissected out with scissors so as to expose the tendons of the superior, external and inferior rectus muscles. These were successively taken up on a strabismus hook and divided, the optic nerve was cut through from the temporal side, and the tissues at the nasal side of the orbit were carefully cleaned from the bone from behind forwards. The tumor was thus thoroughly dissected out, leaving the wall of the orbit denuded at the inner side to the extent of perhaps two centimeters in diameter. The flaps formed by the lid integument and orbicularis muscle were easily brought together by means of three or four sutures, so as to cover in the temporal half of the wound, leaving a pretty large opening at the nasal end to heal by granulation. Union along the line of suture occurred without suppuration; the remaining opening, healed rapidly by granulation, and covered itself by drawing in the loose integument of the lids, so that at the end of a month a horizontal linear cicatrix alone remained to mark the site of the incisions. The skin was drawn smoothly over the concave surface of a shallow depression not deeper than that presented, after an enucleation by the sunken eye-lids when unsupported by an artificial eye.

In this case the lachrymal gland was left in situ; no inconvenience resulted from its non-removal. The second case was that of Mrs. J. S., 50 years of age, whom I first saw Oct. 4,

1880. She had lost the left eye twelve years before, from an inflammatory attack accompanied by perforating ulcer of the cornea. The globe was shrunken to about three-fourths of its normal diameter. There was considerable destruction of tissue at the inner canthus resulting from the free use of caustics four months before for the purpose of destroying what had been considered a malignant growth. The lachrymal sac lay widely open and was discharging freely; the adjacent tissues of the lid were slightly ulcerated, but without induration.

The obstructed nasal duct was dilated by repeated probing, canthotomy, with free division of the external tendon of the orbicularis, was performed for the purpose of relaxing the tissue near the inner canthus, and a group of inverted cilia near the nasal end of the upper lid was excised. The patient went home Nov. 22, with seemingly perfect cicatrization of the ulcerated tissues at the inner canthus, with the lids well relaxed, and relieved from the irritation which had been caused by the inverted eye-lashes. In view of the uncertainty regarding the nature of the original affections for which the cauterization had been practised she was cautioned to return promptly in case of any reappearance of trouble. She returned March 27, 1882, with an epithelioma which extended upon the side of the nose to within five millimeters of the median line and involved about one-third of the tarsal tissue of both lids.

Excision of the diseased tissues with enucleation of the globe was performed exactly as in the former case but with the result of leaving a larger gap at the side of the nose to heal by granulation. The inner wall of the orbit in the region of the lachrymal bone was thoroughly scraped and several small portions of the bone were cut away. The wound healed within six weeks, in part by the union of the flaps preserved from the lid integument and orbicularis muscle, and in part by granulation growth from the edges of the surrounding skin. The remnant of the open lachrymal sac filled with granulations and healed smoothly over with the rest of the granulating wound. Two weeks later the patient was discharged with a smooth, firm cicatrix at the side of the nose, and a linear scar extending from it to the external canthus. In this case also the lachrymal gland was left in situ without resulting inconvenience.

A third operation of the same character was performed about two years ago by Dr. A. Alt at the St. Louis City Hospital, upon a patient whom we saw together in consultation. In this case the whole margin of the lower lid together with the lower half of the conjunctival sack had been destroyed by an epithelioma. The skin and muscle of the upper lid gave a flap of sufficient size easily to come into the cavity left by the enucleation and the excision of the remnants of the lower lid.

The fourth and last case is that of H. D., a farmer 55 years of age, who fifteen years ago was struck by a stick of wood upon the right eye. Two months later the eye "ran out." During the past year the orbit began to fill up, and for two months before he consulted me the new growth had increased rapidly until it had considerably distended the eyelids and had become pretty firmly impacted, although still slightly movable by the recti muscles. The tumor was covered in front by the swollen conjunctiva bulbi, in which a small depression seemed to mark the former position of the cornea.

The operation, which was performed May 1, 1884, consisted in the clearing out of the entire contents of the orbit, through the palpebral opening enlarged at the temporal side by scissors. The lid margins were then clipped away, and the tarsal tissue of the upper and lower lids grasped by toothed forceps and dissected out. The thickened bulbar conjunctiva was removed with the tumor. The wound was left without sutures. May 18. —The patient went home. The orbital cavity was already much reduced in size and presented a uniformly granulating surface. The palpebral opening was rapidly closing at both ends, but more at the temporal end, and was about three-quarters of an inch long. There was every prospect of the speedy covering in of the whole granulating surfaces by the integument of the lids leaving a linear scar crossing a rather deep depression.

The advantage which may fairly be claimed for this operation is, that it permits the free excision of very extensively diseased tissues and leaves a firm, smooth, and nearly linear cicatrix, with a minimum quantity of scar tissue.

A CASE OF SYMPATHETIC NEURO-RETINITIS.

BY THOS. R. POOLEY, M. D., OF NEW YORK.

Without desiring to engage in the discussion which is just now exciting a good deal of interest, as shown by a recent article in the Archives of Ophthalmology, by Dr. Theobald, of Baltimore,* and the comments on the same by the editor of this journal in the last number, I simply desire to report a case which bears on this question, that recently came under my notice. January 24th. 1884 I was consulted by a man 30 years of age, who had lost his left eye by an injury many years before. Aside from this fact, he suffered but the inconvenience consequent upon the loss of so important an organ until a few months before he consulted me, when the lost eye began to be, at times, red and painful, and soon he found, too, that the sight of the other was becoming impaired. His left eye showed the usual signs of irido-cyclitis. It was somewhat phthisical, there was moderate circum-corneal injection, a shallow anterior chamber, discolored iris, with complete circular synechia and cataract.—T and pain on pressure. There was a small scar on the sclero corneal margin, which marked the site, where the foreign body was still in the eye. There was no perception of light. The outward appearances of the right eye were quite normal, but vision was only $\frac{20}{100}$. Ophthalmoscopic examination, showed a delicate infiltration of the optic disc and adjacent retina, which was sufficient to obscure the vessels and the margin of the nerve, and produce cloudiness of the retina. There was also very marked venous hyperæmia which extended to the peripheral portion of the vessels. The iris and uveal tract were entirely free from any evidences of inflammation, and the vitreous was perfectly clear.

I advised enucleation of the injured eye, which was readily consented to by the patient, and performed the same day.

The eye-ball was opened immediately after its removal by a

*Some recent theories regarding the pathogeny of sympathetic ophthalmia viewed from a macroscopic standpoint.

meridional section. It showed the usual plate of bone in the anterior portion of the choroid, which has been described by Knapp and others, as well as calcareous degeneration of the shrunken lens. The retina was detached. But the most remarkable feature was the condition of the optic disc and the surrounding retina, which showed an *intense neuro-retinitis*. The nerve was very much swollen, protruding into the vitreous chamber, and both it and the retina surrounding the margin covered by a thick exudation hiding the vessels. The extra-ocular extremity of the nerve, too, was much swollen, its sheath separated, and the intra-vaginal space filled with fluid. Only a cursory examination was made, and the globe reserved for a further examination, which has not yet been made. No foreign body was found in the eye. After the operation the patient was kept in bed for one week, with a bandage over both eyes, no other treatment being employed. At the end of this time, when discharged from the hospital his V had increased to $\frac{20}{L}$ and the ophthalmoscope showed that the exudation had nearly disappeared, although there was still some fullness of the veins. One week later the fundus looked fairly normal, his V was $\frac{20}{XXX}$ and with a +30 glass he read the finest type.

So far as one case goes to prove anything, it seems to me, we may assume this to be a case of sympathetic neuro-retinitis which had extended from the injured eye to the other along the optic nerve and its sheath by way of the chiasma, which was shown by the condition of both the intra and extra-ocular ends of the enucleated eye, and by the expression in the other, of a pure neuro-retinitis, without the slightest involvement of the anterior portion of the uveal tract. Whether, or not, the transmission of the inflammation by the ciliary nerves in the ordinary forms of sympathetic inflammation be the correct theory, we must still admit that in such cases as the above, and other similar ones the transmission of the sympathetic inflammation is almost certainly by this route. It would be a work of supererogation to say more in support of such a view in this place, as Dr. Alt has entered quite fully into the subject, and promises to continue his communication.

SOME INSTRUCTIVE CASES OF AMETROPIA.

BY SAMUEL THEOBALD, M. D.

Professor of Diseases of the Eye and Ear in the Baltimore Polyclinic and Post-Graduate Medical School; Surgeon to the Baltimore Eye, Ear and Throat Charity Hospital.

It is well known that in ametropic persons there exists no constant relationship between the amount of the optical defect and the degree of the asthenopia which it induces, that in some individuals a trifling amount of hypermetropia or astigmatism will cause decided asthenopic symptoms, while in others a very much greater amount will give rise to no appreciable discomfort. The following case, however, furnishes so striking an example of a high degree of ametropia being borne for years without causing any annoyance, as to make it deserving of mention:

Mrs. B., 36 years of age, the widow of a physician, had always considered herself "near-sighted," because she did not see distant objects as distinctly as other people; but, with this exception, she had prided herself upon the strength of her eyes, and had read and sewed day and night for years without the slightest discomfort. She would not have thought it necessary to have her eyes examined at all, but that she had recently been suffering from obstinate frontal headaches, and her physician, knowing that her sister had required astigmatic correction, suspected that she, too, might be in need of glasses, and suggested that she should consult me.

Upon examination it was found that with each eye she could see only $\frac{20}{60}$, and that this marked impairment of vision was due to a very high degree of mixed astigmatism. A careful test of the refraction was made, both with and without paralysis of accommodation, and the following glasses, which gave for the left eye $V = \frac{20}{xx}$ (?) and for the right eye $V = \frac{20}{xxx}$ (nearly), were prescribed:

L. Eye = $\frac{1}{18}$ c axis 170° \bigcirc — $\frac{1}{13}$ c axis 80° .

R. Eye = $\frac{1}{20}$ c axis 100° \bigcirc = $\frac{1}{11}$ c axis 90° .

From this it will be seen that there was a total astigmatism in the left eye of $\frac{1}{7.54}$ and in the right eye of $\frac{1}{7.09}$, the myopic element

predominating in each. The glasses proved very satisfactory, and the frontal headaches, as was expected, disappeared.

I have the notes also of the case of a gentleman about 38 years of age, of literary tastes, who had never suffered from asthenopia. though he had, uncorrected, a myopic astigmatism of one $\frac{1}{14}$ in one eye, and a mixed astigmatism of more than $\frac{1}{12}$ (H. $\frac{1}{12}$, M. $\frac{1}{14}$) in the other; but who was greatly pleased to receive correcting glasses, as they improved his vision from $\frac{20}{LXX}$ to $\frac{20}{XXX}$.

In contrast with these striking examples of tolerance of astigmatism, I might cite many cases in which marked asthenopic symptoms have been produced by an astigmatism of only $\frac{1}{12}$ and more than one in which the correction of an astigmatism of $\frac{1}{14}$ has been of undoubted benefit.

In regard to the glasses which should be prescribed when there is a *difference of refraction in the two eyes*, Donders says, when the difference is slight, amounting to not more than $\frac{1}{48}$ or $\frac{1}{36}$, we may give to each eye the lens which is required for accurate correction, but that "the difference in glasses can rarely exceed $\frac{1}{40}$ or $\frac{1}{30}$." ¹

Nettleship says it is seldom possible to make a difference greater than 1.5 D. ²; while Noyes states that "a difference not more than $\frac{1}{16}$ between the eyes can often be easily tolerated in the correcting glasses." ³

The following case shows how very far these limits may be exceeded, in exceptional instances.

Mr. H., a college student, about 20 years of age, consulted me in September 1880, on account of asthenopia and defective vision. With the right eye he could see only $\frac{10}{66}$, but could read Jaeger No. 1; while with the left eye he could see $\frac{20}{LXX}$ (?), but only spell out with difficulty short words of Jaeger No. 3. The right eye was found to be decidedly myopic and slightly astigmatic, — $\frac{1}{14}$ s \bigcirc — $\frac{1}{60}$ e axis 170° improving V to $\frac{20}{XX}$ (?). The left eye, on the contrary, showed slight manifest hyperme-

1 Accommodation and Refraction of the Eye, p. 556.

2 Diseases of the Eye, p. 316 (Am. Edition).

3 Diseases of the Eye, p. 76.

tropia and a high degree of hypermetropic astigmatism, and its V was improved to the same point as that of the other by $+ \frac{1}{48} \text{s} \subset + \frac{1}{10} \text{c}$ axis 100° . When binocular vision was attempted through these glasses, there was a momentary doubling or confusion of the retinal images, but as this disappeared in a moment, and vision for both near and distant objects was comfortable and entirely satisfactory to the patient, I determined to prescribe them, advising him to wear them constantly, for near as well as distant vision. The experiment was entirely successful, and satisfactory binocular vision was thereafter enjoyed. The difference between the spherical glasses in this case was a little more than $\frac{1}{11}(\frac{1}{10.8})$, between the cylinders considerably more than $\frac{1}{9}$, and between the most hypermetropic meridian of the left eye and the most myopic meridian of the right there was a difference equal to a lens of less than 5" focus.

The subsequent history of this case presents another interesting feature. Since by the action of his glasses the left eye was made to take an active part in near vision, which probably it had not done before, it presently began to show a tendency to myopic elongation, as the right eye which he had previously used for near vision had already done; so that sixteen months after the first examination the compound hypermetropic astigmatism of the left eye had given place to a mixed astigmatism, requiring for its correction — $\frac{1}{80} \text{c}$ axis $15^\circ \subset + \frac{1}{11} \text{c}$ axis 105° . Fourteen months after this second examination the distant vision of the left eye had again become indistinct, and I found it necessary to change the correction to — $\frac{1}{36} \text{c}$ axis $15^\circ \subset + \frac{1}{13} \text{c}$ axis 105° , which again brought up the V of this eye to $\frac{20}{XX}$ (?). The refraction of the right eye, meantime, had undergone no change, and its V, with the lens first prescribed, was still $\frac{20}{XX}$ (?). More than a year has elapsed since this last modification of his glasses, but as the eyes have not been examined since, it is not known whether the refraction has undergone any further alteration.

The case of Miss F., about 35 years of age, furnishes another example of glasses markedly different in focus being worn with satisfaction. Her left eye was operated upon successfully some years since for strabismus, and its V is only $\frac{20}{LXX}$. The right eye I performed an iridectomy upon two years ago for an

inflammation of glaucomatous character, but with its considerable amount of (probably traumatic) astigmatism corrected, it has $V = \frac{2.0}{\times \times}$ (?). For the past six months this patient has been wearing with satisfaction for distant vision (though she speaks of occasionally seeing objects double) L. Eye $+\frac{1}{8}$ s $\subset +\frac{1}{30}$ c axis 90° R. Eye $+\frac{1}{8}$ c axis 5° . With these she has, as stated, $V = \frac{2.0}{\times \times}$ with the left eye; $V = \frac{2.0}{\times \times}$ (?) with the right.

To these two cases which show how great a difference in the strength of the glasses it is sometimes practicable to make, the following case, which illustrates the decided benefit that may result from taking account of even slight degrees of anisometropia, and presenting for each eye the lens which its refraction calls for, may be added:

Mr. C., aged 41, is at the head of a large retail shop, and having charge of the books is constantly engaged in writing. He is prematurely presbyopic, and at the time he sought my advice was wearing for near vision $+\frac{1}{16}$ s glasses. With these he could see small type distinctly, but he complained of persistent asthenopia in near vision, chiefly in the right eye. He was found to have with each eye $V = \frac{2.0}{\times \times}$, and in neither was there any astigmatism. Upon carefully testing each eye with glasses, a slight amount of hypermetropia (Hm. $\frac{1}{2}$) was discovered in the right, while there was no Hm. at all in the left. His near vision was then tested, and it was found that with $+\frac{1}{16}$ (the glasses he had been wearing) the left eye could read Jaeger No. 1 a good deal closer than the right. With $+\frac{1}{8}$ for the left eye, and $+\frac{1}{16}$ for the right, the near point of the left was still rather closer than that of the right; but when given $+\frac{1}{8}$ the right eye had the advantage, a difference of two numbers between the glasses being more, apparently, than was called for; accordingly, in place of the $+\frac{1}{16}$ glasses which he had been wearing, he was given $+\frac{1}{8}$ s for the right eye, $+\frac{1}{8}$ for the left. This slight change accomplished all that could be desired. The asthenopia disappeared at once, and during the twelve months which have since elapsed, has not returned.

A NOMENCLATURE OF OPHTHALMOLOGY.

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The need of a uniform nosology in ophthalmology is so strongly felt that it is not necessary to insist upon its importance.

Modern ophthalmology was so sudden in its rise and so rapid in its progress that even its students have found it difficult to keep pace with the refinements in meaning of those terms that have been necessarily introduced to express our more accurate knowledge, while to the non-specialist they sound almost like an unknown tongue. It would seem to be time therefore to compile a list, as complete as may be possible, of ophthalmic diseases and anomalies for the benefit both of our specialty and the profession at large.

In 1880 the National Board of Health not being able to find any such list applied to me to furnish them with one to be used in the returns of vital statistics. This list was made and published in Supplement number 9 of their Bulletin. It was offered only as suggestions towards that full and complete ophthalmic nosology which was looked forward to in the new Nomenclature of Diseases to be issued by the Royal College of Physicians of London, on which a committee had been at work for a number of years. This committee has made its report to the College and I have, through the courtesy of Dr. J. S. Billings, of the Library of the Surgeon General's Office, had an opportunity of examining it. The incompleteness of the nomenclature of ophthalmology as recommended by this committee has been found upon this examination, to be so great that at the suggestion of the editor of this Journal, I have agreed to the republication, with revision, of my original list.¹

1. My list contains about one hundred more names than the report of the committee. Among the more important omissions may be mentioned Choroiditis areolaris — C. exudative — C. disseminate. — C. spongy. —

It is a matter deeply to be deplored that so high an authority as the Royal College of Physicians should put forth so imperfect a nosology, and such indifference to the claims of such an important branch of medical science as ophthalmology can, it seems to us, find no excuse. There are several ophthalmologists in England who are capable of giving us, under the seal of the Royal College of Physicians, as complete a nomenclature as is possible under the circumstances, and the pity of it is that another such opportunity is not likely to arise for a number of years.

The following list is offered to the profession, in the absence of anything better, as a basis for and the beginning of what we hope may become in time a complete nosology, useful both to the specialist and the statistician. We do not claim for it perfection or completeness. About many points there may and will be dif-

Chorio-retinitis.—Detachment of the choroid.—Hyperæmia of the choroid.—Sclerotico—choroiditis.—Croupous conjunctivitis.—Ulcer of the conjunctiva.—Circumcorneal hypertrophy of the conjunctiva—Keratitis-bullosa—K. fascicular.—K. neuroparalytic.—Kerato-iritis.—Leucoma adherens.—Pannus crassus.—P. tenuis.—Resorption ulcer of the cornea.—Sclerosis of the cornea. No mention is made of any forms of glaucoma, but the acute, chronic, hemorrhagic, fulminans and secondary. Essential Phthisis bulbi is not mentioned. Neither is any form of cyclitis, corectopia, exclusion of the pupil, occlusion of the pupil, plastic iritis, purulent iritis, no forms of irido-cyclitis or irido-choroiditis, reversion of the iris, rupture of the iris, rudimentary iris, nor spongy iritis.

Several forms of cataract are omitted; and neither lenticonus nor subluxation of the lens are noted. Under diseases of the lids we fail to find tarsitis, distichiasis, lagophthalmus, nictitation, and several other minor affections. No record is made of blepharospasm, insufficiency of the muscles, and only three kinds of strabismus are mentioned, viz., paralytic, spasmodic and concomitant.

No form of paralysis of the ocular muscles is mentioned. Tenonitis, dislocation of the eye-ball, and fracture of the bones of the orbit are passed over in silence. Under "disorders of vision," we fail to find any allusion whatever to anomalies of the visual field, metamorphopsia, or nervous asthenopia, and many of the various forms of amaurosis and amblyopia are not set down. Regular astigmatism is divided into myopic and hypermetropic, the compound forms not being mentioned.

Many affections of the retina are omitted, among them embolism of the central artery of the retina, perivasculitis, thrombosis; and neuro-retinitis descending and ascending, retro-bulbar neuritis and dropsy of the nerve sheath are not to be found.

ferences of opinions, but a perfectly satisfactory nosology is a dream to be realized only by the ophthalmologist of the very distant future.

In making a nomenclature to be used by English-speaking people it is often a matter of difficulty to select the proper term for certain affections. We have in the following list employed, wherever practicable, English words, taking the Latin and Greek terms only in those instances, where long usage has rendered them a part of our medical vernacular, or where they offered the advantage of decided brevity and compactness. So far as it has been possible, we have tried to make the specific name of a disease correspond to the known or supposed pathology of the affection, though in deference to past usages we have often at the same time given the name furnished by other characteristics, thus: We have given, in addition to *conjunctivitis purulent*, *C. gonorrhæal*, to indicate one especial cause, and *C. of the new-born*, because this has been for years regarded as a special form of purulent conjunctivitis. It has not been possible, of course, to give every name a disease has been, or is even now known by, but we think it is possible to classify any affection of the eye under some name to be found in the following list:

AFFECTIONS OF THE CHOROID AND VITREOUS HUMOR.

Atrophy of the choroid.
Choroiditis, areolar.
Choroiditis, exudative.
Choroiditis, disseminate.
Choroiditis, metastatic.
Choroiditis, plastic.
Choroiditis, purulent.
Choroiditis, serous.
Choroiditis, spongy (gelatinous).
Choroiditis, syphilitic.
Chorio-retinitis.
Coloboma of the choroid.
Detachment of the choroid.
Formation of bone in the choroid.

Foreign body in the vitreous humor.
Hemorrhage into the choroid.
Hernia of the choroid.
Hemorrhage into the vitreous humor.
Hyperæmia of the choroid.
Inflammation of the vitreous humor (hyalitis).
Opacities of the vitreous humor.
Persistent hyaloid artery.
Rupture of the choroid.
Tubercles in the choroid.
Tumors of the choroid.
New blood vessels in the vitreous humor.
Parasites in the vitreous humor.
Sclerotico-choroiditis.
Sparkling synchysis of the vitreous humor.
Synchysis of the vitreous humor.

AFFECTIONS OF THE CONJUNCTIVA.

Amyloid degeneration of the conjunctiva.
Apoplexy of the conjunctiva (ecchymosis).
Atropine conjunctivitis.
Burns of the conjunctiva.
Caruncle, inflammation of.
Chemosis, inflammatory.
Chemosis, passive.
Circumcorneal hypertrophy of the conjunctiva.
Conjunctivitis, catarrhal.
Conjunctivitis, croupous.
Conjunctivitis, diphtheritic.
Conjunctivitis, follicular (papillary).
Conjunctivitis, gonorrhœal.
Conjunctivitis of the globe.
Conjunctivitis of the lids.
Conjunctivitis of the new-born.
Conjunctivitis, phlyctenular (scrofulous).
Conjunctivitis, purulent.
Conjunctivitis, pustular.
Conjunctivitis, trachomatous.

Emphysema of the conjunctiva.
Encanthus.
Foreign bodies in the conjunctiva.
Hyperæmia of the conjunctiva.
Lithiasis of the conjunctiva.
Lymphangiectasia of the conjunctiva.
Malformation of the conjunctiva.
Metallic stains.
Parasites in the conjunctiva.
Pinguecula.
Pterygium.
Tumors of the conjunctiva.
Ulcer of the conjunctiva.
Wounds of the conjunctiva.
Xerosis of the conjunctiva.

AFFECTIONS OF THE CORNEA.

Abscess of the cornea.
Abrasion of the cornea.
Arcus senilis.
Cystoid scar.
Deposit of lead in the cornea.
Deposit of lime in the cornea.
Fistula of the cornea.
Foreign body in the cornea.
Hernia of the cornea.
Hydrophthalmus.
Hypopyon.
Keratitis, diffuse.
Keratitis, bullosa.
Keratitis, fascicular.
Keratitis, neuro-paralytic.
Keratitis, pannous.
Keratitis, parenchymatous (interstitial).
Keratitis, phlyctenular (scrofulous).
Keratitis, punctate.
Keratitis, purulent.
Keratitis, superficial.

Keratitis, syphilitic.
Keratitis, traumatic.
Kerato-conus.
Kerato-globus.
Kerato-iritis.
Kerato-malacia.
Leucoma-adherens.
Leucoma of the cornea.
Macula of the cornea.
Onyx.
Pannus, crassus.
Pannus, tenuis.
Resorption ulcer of the cornea.
Serpent ulcer of the cornea.
Sloughing of the cornea.
Staphyloma of the cornea.
Tumor of the cornea.
Ulcer of the cornea, acute.
Ulcer of the cornea, chronic.
Ulcer of the cornea, marginal.
Wounds of the cornea.
Xerosis of the cornea.

GLAUCOMA.

Glaucoma, absolute.
Glaucoma, acute.
Glaucoma, chronic,
Glaucoma, fulminans.
Glaucoma, hemorrhagic.
Glaucoma, imminent.
Glaucoma, inflammatory.
Glaucoma, secondary.
Glaucoma, simple.
Glaucoma, sympathetic.
Glaucomatous degeneration.

Essential phthisis bulbi.

AFFECTIONS OF THE IRIS AND CILIARY BODY.

Atrophy of the iris.

Coloboma of the iris.
Corectopia.
Cyclitis, plastic.
Cyclitis, purulent.
Cyclitis, serous.
Cyclitis, sympathetic.
Cyst of the iris.
Decoloration of the iris.
Exclusion of the pupil.
Foreign body in the iris.
Gumma of the iris.
Hernia of the iris.
Hemorrhage in the iris.
Hyphæma.
Irido-choroiditis, plastic.
Irido-choroiditis, purulent.
Irido-choroiditis, spongy (gelatinous).
Irido-choroiditis, serous.
Irido-cyclitis, plastic.
Irido-cyclitis, purulent.
Irido-cyclitis, serous.
Irido-cyclitis, sympathetic.
Irido-dialysis.
Irido-plegia.
Iritis, arthritic.
Iritis, gonorrhœal.
Iritis, plastic.
Iritis, purulent.
Iritis, rheumatic.
Iritis, serous.
Iritis, spongy (gelatinous).
Iritis, sympathetic.
Iritis, syphilitic.
Iritis, traumatic.
Iritis, tuberculous.
Irideremia.
Mydriasis.
Myosis.

Occlusion of the pupil.
Polycoria.
Persistent pupillary membrane.
Reversion of the iris.
Rudimentary iris.
Rupture of the iris.
Synechia anterior.
Synechia posterior.
Tremulous iris.
Tumor of the iris.
Wounds of the iris.

AFFECTIONS OF THE LACHRYMAL APPARATUS.

Abscess of the lachrymal gland.
Atresia of the punctum.
Caries of the fossa lacrymalis.
Dacryo-adenitis.
Dacryo-cystitis, catarrhal.
Dacryo-cystitis, purulent.
Double punctum.
Dacryo-lithiasis.
Eversion of the punctum.
Exostosis of the nasal duct.
Fistula of the lachrymal sac.
Foreign body in the punctum.
Fracture of the lachrymal bone.
Fungi in the lachrymal canal.
Inflammation of the lachrymal gland.
Polypus of the lachrymal sac.
Sanguinious lachrymation.
Stillicidium lacrymarum (Epiphora).
Stricture of the nasal duct.
Tumor of the lachrymal gland.

AFFECTIONS OF THE LENS.

Aphakia.
Capsulitis.
Cataract, accreted.

Cataract, anterior polar.
Cataract, axial.
Cataract, black.
Cataract, calcareous.
Cataract, capsular.
Cataract, complete.
Cataract, congenital.
Cataract, cortical.
Cataract, diabetic.
Cataract, fusiform.
Cataract, hard.
Cataract, hypermature.
Cataract, incipient.
Cataract, incomplete.
Cataract, lamellar (zonular).
Cataract, membranous.
Cataract, morgagnian.
Cataract, nuclear.
Cataract, posterior polar.
Cataract, punctate.
Catasact, secondary.
Cataract, senile.
Cataract, soft.
Cataract, spurious.
Cataract, traumatic.
Coloboma lentis.
Dislocation of the lens.
Ossification of the lens.
Parasites in the lens.
Phakitis.
Lenticonus.
Rupture of the lens capsule.
Subluxation of the lens.

AFFECTIONS OF THE LIDS.

Ablepharon.
Abscess of the lids.
Acarus folliculorum.

Ankyloblepharon.
Anthrax of the lids.
Blepharitis marginalis.
Blepharo-adenitis.
Blepharo-phimosis.
Chalazion.
Chromhidrosis (Blepharal melasma).
Coloboma palpebrarum.
Distichiasis.
Ectropion.
Elephantiasis palpebrarum.
Emphysema of the lids.
Entropion, organic.
Entropion, spasmodic.
Epicanthus.
Erythema of the lids.
Hæmophthalmus externus.
Hæmatidrosis.
Hæmatoma (black eye).
Herpes of the lids.
Hidrosis of the lids.
Hordeolum.
Hyperæmia of the lids.
Lagophthalmus.
Madarosis.
Nictitation.
Œdema of the lids.
Paralysis of the orbicularis.
Phthiriasis ciliarum.
Ptosis, atonic.
Ptosis, congenital.
Ptosis, paralytic.
Seborrhœa.
Symblepharon.
Trichiasis.
Tarsitis.
Tumors of the lid.
Verruca of the lids.
Xanthelasma of the lids.

AFFECTIONS OF THE MUSCLES OF THE EYE.

Blepharo-spasm.

Insufficiency of the internal rectus.

Insufficiency of the external rectus.

Laceration of the ocular muscles.

Nystagmus, acquired.

Nystagmus, atonic.

Nystagmus, congenital.

Nystagmus, oscillating.

Nystagmus, rotating.

Nystagmus, tonic.

Ophthalmoplegia externa (paralysis of all the external muscles of the eye).

Ophthalmoplegia interna (paralysis of all the internal muscles of the eye).

Paralysis of the ciliary muscles (cycloplegia)

Paralysis of the external rectus muscle.

Paralysis of the internal rectus muscle.

Paralysis of the inferior oblique muscle.

Paralysis of the levator palpebræ superioris muscle.

Paralysis of the motor oculi communis muscle.

Paralysis of the orbicularis muscle.

Paralysis of the superior oblique muscle.

Paralysis of the superior rectus muscle.

Spasm of the ciliary muscle.

Strabismus, bilateral.

Strabismus, concomitant.

Strabismus, convergent.

Strabismus, divergent.

Strabismus, downward.

Strabismus, monolateral.

Strabismus, paralytic.

Strabismus, periodic.

Strabismus, upward.

Tendinitis.

AFFECTIONS OF THE ORBIT AND GLOBE.

Albinism.

Anophthalmus.

Abscess of the orbit.
Bone, formation of, in the eye.
Caries of the orbit.
Cellulitis of the orbit.
Dislocation of the eyeball.
Effusion of blood in the orbit.
Emphysema of the orbit.
Enlargement of the frontal sinus.
Exophthalmus.
Fracture of the orbital bones.
Herpes frontalis.
Inflammation of the frontal sinus.
Microphthalmus.
Necrosis of the orbital bones.
Panophthalmitis.
Periostitis of the orbit.
Phthisis bulbi.
Tenonitis.
Tumor of the orbit.

ANOMALIES OF REFRACTION, ACCOMMODATION AND VISION.

Achromatopsia.
Accommodation, spasm of.
Amaurosis, hysterical.
Amaurosis, partial, transient.
Amaurosis, without ophthalmoscopic signs.
Amblyopia, alcoholic.
Amblyopia, congenital.
Amblyopia, central.
Amblyopia, saturnine.
Amblyopia, tobacco.
Amblyopia, toxic.
Amblyopia, ex anopsia (from non-use).
Amblyopia, hysterical.
Ametropia.
Anisometropia.
Asthenopia, accommodative.
Asthenopia, muscular.

Asthenopia, nervous.
Astigmatism, compound (myopic or hypermetropic).
Astigmatism, irregular.
Astigmatism, mixed.
Astigmatism, regular.
Astigmatism, simple (myopic or hypermetropic).
Blue-yellow blindness (*Hering*).
Chromatopsia.
Color-blindness, acquired.
Color-blindness, congenital.
Concentric contraction of the visual field.
Day-blindness.
Diplopia, homonymous.
Diplopia, crossed.
Diplopia, vertical (up or down).
Dyschromatopsia (feeble color-sense).
Flittering scotoma.
Green blindness.
Hemianopsia, inferior.
Hemianopsia, left.
Hemianopsia, nasal.
Hemianopsia, right.
Hemianopsia, superior.
Hemianopsia, temporal.
Hypermetropia, axial.
Hypermetropia, from deficient curvature of the refracting surfaces.
Hypermetropia, acquired.
Hypermetropia, latent.
Macropsia.
Metamorphopsia.
Micropsia.
Moon-blindness.
Muscae volitantes.
Myopia, axial.
Myopia, acquired.
Myopia, from excessive curvature of the refracting surfaces.
Myopia, false.

Night blindness.

Photopsia.

Presbyopia.

Polyopia, monocular.

Red-blindness.

Red-green blindness (*Hering*).

Ring-scotoma.

Scotoma.

Scotoma, central.

Sector-like defect of the visual field.

Snow-blindness.

Violet-blindness.

AFFECTIONS OF THE RETINA AND OPTIC NERVE.

Amaurotic cat's-eye.

Anesthesia of the retina.

Atrophy of the retina.

Apoplexy of the retina.

Atrophy of the optic nerve.

Atrophy of the optic nerve, progressive.

Chorio-retinitis, diffuse.

Chorio-retinitis, disseminated.

Chorio-retinitis, circumscribed.

Commotio retinae.

Congestion of the optic disc.

Cystic degeneration of the retina.

Detachment of the retina.

Dropsy of the optic nerve sheath.

Epilepsy of the retina.

Embolism of the central artery of the retina.

Embolism of a branch of the central artery of the retina.

Effusion under the retina.

Excavation of the optic disc.

Foreign body in the retina.

Hyperæmia of the retina.

Hyperesthesia of the retina.

Ischæmia of the retina.

Neuro-retinitis.

Neuro-retinitis, ascending.

Neuro-retinitis, descending.
 Neuritis, syphilitic.
 Œdema of the retina.
 Œdema of the optic disc.
 Opaque optic nerve fibers.
 Papillitis (choked disk.)
 Peripapillary degeneration of the retina.
 Perineuritis, optic.
 Perivasculitis, retinal.
 Retinitis, albuminuric.
 Retinitis, central.
 Retinitis, central recurring.
 Retinitis, chronic.
 Retinitis, circumpapillary.
 Retinitis, circumscribed.
 Retinitis, diabetic.
 Retinitis, diffuse.
 Retinitis, hemorrhagic.
 Retinitis, leucæmic.
 Retinitis, oxaluric.
 Retinitis, pigmentary.
 Retinitis, proliferating.
 Retinitis, pernicious anemic.
 Retinitis, sympathetic.
 Retinitis, syphilitic.
 Retrobulbar optic neuritis.
 Thrombosis of the retinal vessels.
 Tumors of the retina.

AFFECTIONS OF THE SCLEROTIC.

Anterior scleral staphyloma.
 Episcleritis.
 Equatorial scleral staphyloma.
 Foreign body in the sclera.
 Posterior scleral staphyloma.
 Scleritis.
 Wounds of the sclera.

OPERATIONS ON THE EYE.¹

On the conjunctiva.

For pterygium.

¹ There are about fifty titles in this list that are not to be found in that reported by the committee to the Royal College of Physicians.

Removal of tumors.

Removal of foreign bodies.

Syndectomy (peritomy).

On the cornea and anterior chamber.

Ablation of staphyloma.

For cystoid scar.

For serpent ulcer of the cornea (*Saemisch*).

Paracentesis of the cornea.

Removal of foreign bodies from the cornea.

Removal of tumors from the cornea.

Removal of foreign bodies from the anterior chamber.

Tattooing of the cornea.

On the globe and orbit.

Enucleation of the globe.

Exenteratio orbitæ.

Extraetion of foreign bodies from the interior of the eye.

Neureetomy.

Optico-eiliary neurotomy.

Paracentesis of the walls of the globe.

Puncture of the optie-nerve sheath.

Removal of tumors from the orbit.

Removal of tumors from the optic nerve.

Sclerotomy.

On the lids.

For ankyloblepharon.

Blepharoplasty.

For destruction of the hair follicles.

For ectropion.

For entropion.

For enlargement of the palpebral opening (canthotomy).

For evaeuation of eysts.

For excision of piece of tarsal cartilage.

For ptosis.

For removal of tumors.

For removal of hair bulbs.

For removal of the tarsal cartilage.

For the restoration of lid.

For symblepharon.

For tarsorrhaphy (diminishing of the palpebral opening).

For trichiasis.

Transplantation of the cilia.

On the muscles.

Tenotomy of the muscles (strabotomy).

Advancement of a muscle.

Excision of a piece of muscle.

On the iris.

Corelysis (*Streatfield*).

Detachment of posterior synechia (*Passavant*).

Iridectomy.

Iritomy.

Irito-ectomy.

Iridodesis.

Removal of foreign body from the iris.

On the lachrymal apparatus.

Destruction of the lachrymal sac.

Division of stricture of the nasal duct.

Enlargement of the punctum.

Extirpation of the lachrymal sac.

For atresia of the punctum.

Opening of the lachrymal sac.

Probing the nasal duct.

Removal of the lachrymal gland.

Removal of tumors of the lachrymal gland.

Slitting up the canaliculus.

On the lens.

For depression of cataract (couching).

For extraction of cataract by the flap method.

For extraction of cataract by the Graefe method.

For extraction of cataract in the capsule.

For extraction of cataract by the linear method.

For extraction of cataract by the Weber method.

For extraction of cataract by the sclero-corneal flap method.

For scoop extraction.

For secondary cataract.

For solution of cataract.

For removal of cataract by suction.

THE THERAPEUTIC VALUE OF JEQUIRITY.

BY S. POLLAK, M. D., ST. LOUIS, MO.

In compliance with your request, I send you a brief statement of my experience of the therapeutic value of jequirity. I have used it quite extensively, both in hospital and private practice, since the latter part of 1882. I have reported the history of my first three cases in a paper read before the Missouri State Medical Society May 16, 1883, and the St. Louis Medical Society May 26, 1883, (see *St. Louis Medical and Surgical Journal*, July 1883). They were aggravated cases of chronic trachoma with dense pannus. DeWecker's original cold fresh infusion of jequirity was brushed over the everted lids, and absorbent cotton saturated with it, was applied over them. In five days a sero-purulent discharge was established, a croupous membrane had formed over the palpebral conjunctiva, which subsided on the discontinuance of the jequirity; and with it, disappeared the granulations of the lids, and the vascularity of the cornea; leaving cornea and conjunctiva in an absolutely healthy condition in two of these three cases.

The third case did not fare quite as well, owing probably to a naso-pharyngeal complication of syphilitic origin.

A series of thirty-three cases of trachoma with pannus followed, of more or less gravity, which were treated almost in a stereotyped manner, like the three just mentioned, with uniform good results. But the 34th case was a painful surprise to me; it was a severe and rude check to the triumphant career of jequirity. The case was fully reported in a paper read before the St. Louis Medical Society, and published in the *Weekly Medical Review* in March 1884.

It was that of a woman aged 28, married, but childless, who was suffering for many months from granulations of the palpebral conjunctiva, with large pannus, and on whom standard remedies had been tried by able oculists before I saw her at the clinic. An infusion of jequirity was applied in the usual manner. A sero-purulent secretion was established on the 2d

day, and a firm membrane on the palpebral conjunctiva on the 3d day, with hard painfully swollen lids; which, however, subsided on the discontinuance of the jequirity on the 5th day. There was every reason to look for a rapid and radical cure. But three days later, purulent infiltration of the entire cornea of the right eye ensued, resulting in a partial sloughing of it, on its lower aspect. Vision was irretrievably lost. The cornea even now looks opaque, flat, with a thin cicatrix where the slough came off, through which a few rays of light are admitted and fingers in close proximity can be counted. The cornea of the left eye is clear, vision good, but follicular granulations on the palpebral conjunctiva of both eyes have recurred.

I am not satisfied that jequirity was the main factor in this unfortunate result. There is reason to ascribe a large part, and perhaps the whole of it, to a traumatism (the patient thought she scratched her eye).

I became henceforth more cautious in the use of jequirity. Seventeen more cases (fifty-one in all) have since been treated successfully with it, but my procedure is greatly modified in diverse ways:

1. I saw to it that only sound beans were used. These must be decorticated before they are bruised, and macerated only 1 to 2 hours in cold water and filtered; the infusion not to exceed 3 per cent.

2. 3 to 4 applications to the everted lids, by means of a camel-hair pencil suffice to induce a sero-purulent discharge, with membranous formation on the palpebral conjunctiva, large oedema of lids and excessive lachrymation, but which soon disappear, without the aid of any other remedy, and leave a notable improvement of the vascularity of the cornea and of the granular lids.

Among the fifty-one cases, there were patients of both sexes, of all ages and of three races.

The cardinal symptoms of panniform trachoma were more or less pronounced in all; there were none, who had not been under professional care before, so that I could commence with the jequirity at once. Indeed, a goodly number came for that sole purpose from a great distance.

It would exceed the scope of your enquiry, and the limit of your journal, were I to tabulate my cases in such a beautiful and practical manner, as our friend, Dr. Gruening did. A brief history of a few typical cases will probably suffice you.

1. A farmer of Missouri, æt. 54, was brought to the clinic by his physician. Fifteen years ago, he had had an attack of "sore eyes," which had left him sightless and helpless to this day, resisting the best treatment "to be had."

I found large, hard granulations of the palpebral conjunctiva, several anterior symblephara. Cornea covered with a dense network of bloodvessels, the pupils scarcely discernible. I dissected the symblephara off the eye-ball and attached them to the palpebral conjunctiva in places, denuded for the purpose. DeWecker's 4 per cent infusion, was *instilled* under the upper lids every 6 hours, and compresses, saturated with it were placed over the eyes. Not until the third day did an abundant serous secretion follow, which became purulent on the fourth. The lids were œdematous, painfully hard, evertible with difficulty, but sufficiently so, to exhibit membranes in the substance of the palpebral and ocular conjunctiva. The use of jequirity was stopped, and only bathing with hot water enjoined. The improvement was magical. One by one, the annoying symptoms gave way. When on the eighth day the lids were raised with elevators, he exclaimed, "he could see." He returned home on the thirteenth day, with corneæ perfectly clear, the conjunctiva of lids smooth. He read the large print in a daily paper. He has been heard from nearly every month since; he has not lost a day's work on the farm, and "reads the Bible every Sunday."

2. I performed Hotz's operation for trichiasis and distichiasis, with abrasions of the cornea, on a negro male, aged 33, successfully, but though the palpebral margin and lashes became everted, the trachoma and pannus which accompanied it, and had so long existed, were not much benefitted. Reluctantly, and only as a dernier resort, I applied by instillation a three per cent infusion of jequirity, three or four times, with surprising effect. On the fourth day, jequiritic ophthalmia was established in all its severity, but subsided as rapidly, with the granulations smothered, pannus lessened, the corneal abrasions healing, haziness disap-

pearing. In ten days, he left the hospital, cured. No recurrence reported six month later.

3. A Mongolian of 30, with trachomatous pannus and concomitant blepharophimosis, which made it difficult and painful to evert the lids, canthoplasty was performed on, but without influencing the trachoma sufficiently. Jequirity was resorted to, as in the preceding case, with equally prompt and beneficial result. He returned to his laundry on the tenth day, happy and contented, with the prodigal promise he would, on his return to China, send all ophthalmic Confucians to this clinic.

I had more trouble with juveniles than with adults; with subacute, than with chronic cases, so that I was led to reach the following conclusions:

1. Jequirity is one of the most interesting, and surprising therapeutic agents; very potent, yet limited in its effect.

2. It is the most reliable and prompt remedy in the treatment of trachoma and pannus.

3. The more inveterate the granulations, the more efficient and striking the result.

4. Adults are more amenable to treatment than young individuals.

5. Abrasions, or even ulcerations of the cornea are no bar to its cautious use.

6. Pyorrhœa is no essential factor in the treatment, but a sero-purulent discharge is, as well as the formation of a membrane on the palpebral conjunctiva.

7. Atrophy of the conjunctiva and formation of cicatricial tissue may be exceptional occurrences; they have never been met with by me.

8. A sound bean, and a fresh infusion—not more than 48 hours old, is a *conditio sine qua non*; the deterioration of the infusion is so rapid, that in three days it swarms with bacteria, becomes putrid, fetid and irritating, and unfit for use.

9. The maximum strength of the infusion need not exceed 3 per cent, and a maceration of a few hours suffices to abstract

all its medicinal properties. A stronger infusion, and a too frequent application, may induce destructive purulency.

10. Opiates can be dispensed with, for, all painful symptoms subside on the discontinuance of the jequirity.

[The editor of this Journal thought it of importance that the bad and good results from the use of jequirity should be equally well known to the profession. He has to add to the unfortunate case of Dr. Pollak's, one from his own practice, in which, during the croupous inflammation caused by a 3 per cent. infusion, prepared according to von Wecker's prescription, a dense pannus developed in a clear cornea, which did not yield to the repeated use of jequirity. He further desires to state, that during a discussion on the subject at a meeting of the St. Louis Medical Society, several gentlemen reported cases in which large ulcers were produced in the cornea by the use of jequirity.]

NOTICE.

The continuation of Dr. Alt's paper on sympathetic ophthalmia will appear in the July Number.

The better and promptly to answer numerous inquiries of advertisers and their requests for such favors, the publishers wish to state, that it is *not*, in accordance with the policy of the American Journal of Ophthalmology, that any editorial mention of advertisements appear therein.

CORRIGENDA.—NO. 3.

Page 65, Sixth line from above for *granulation* read *enucleation*.

Thirteenth line from above for *amount* read *remnant*.

Page 68, seventh line from above for *come into* read *cover in*.



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A CASE OF SYMPATHETIC NEURO-RETINITIS.
REMARKS ON SYMPATHETIC OPHTHALMIA.

BY ADOLF ALT, M. D.

[Continued from No. 2, page 64].

Before giving an account of the anatomical examination of the rabbit's eyes, referred to in my last communication, I think it proper here to some extent to detail the experiments which I have made, as they are of especial interest in this question.

At first I tried to produce sympathetic ophthalmia by injuring one eye in a great variety of ways by cutting through the cornea, iris and crystalline lens, or through the sclerotic, choroid and retina, or through the ciliary region, by bruising or cutting the optic nerve, etc. All of these experiments were absolutely without results with regard to the production of any signs of sympathetic ophthalmia in the fellow-eye.

Again, encouraged by the success of Deutschmann, who, as before stated, produced a sympathetic papillo-retinitis by injecting the spores of *aspergillus glaucus* into rabbits' eyes, I tried to set up a yet more violent irritation of the optic nerve, than he had done, by passing through it a silk thread which had

been well soaked in croton oil. To do this appeared to be an easy matter, yet I found that it was quite a difficult procedure, and that I was successful in really getting the needle and thread to pass through the optic nerve in a very few cases only. Whenever I did succeed in doing so, the result was an undoubted optic neuritis in the second eye, which was easily recognized with the ophthalmoscope on the fourth or fifth day. In Deutschmann's cases the sympathetic papillo-retinitis usually appeared on the seventh day or a little later. As I wanted to produce a sympathetic inflammation of the uveal tract, if possible, I observed these animals for a longer time and made no anatomical examination of the eyes in this period. The optic neuritis always disappeared again in the course of about one week and no further sympathetic symptoms occurred. One of these rabbits I have now had under observation for over three months, and no further sign of inflammation has ever occurred in the eye not injured.

Thinking that after all, as Leber will have it, septic material might be necessary to produce a sympathetic ophthalmia, I next tried the injection of septic material into the eye. I allowed a piece of meat to putrefy in water, and injected a quantity of the foul juice into the left eye of a white, full grown rabbit. Therefrom resulted a mild purulent panophthalmitis which destroyed this eye, without, however, altering its shape, and not a sign of sympathetic inflammation in the fellow eye could at any time be detected. The rabbit which I used for this experiment is as yet alive and seems to be otherwise perfectly healthy. The same negative result followed injections of the same septic fluids into the eyes of some other rabbits.

Quite accidentally, while making an infusion of *abrus precatorius*, I one day thought of injecting some of the infusion into the eyes of a number of rabbits. I used several infusions different in strength. The uniform result was a violent purulent panophthalmitis, which led to shrinking of the injured eye. The poison mostly brought about the death of the rabbits on the third or fourth day. One rabbit remained alive for several weeks; he had a well marked optic neuritis in the uninjured eye on the third day, which, however, passed off gradually, and was no longer visible on the seventh

day. One rabbit only has now remained alive for ten weeks, and he is as yet apparently healthy. His injured eye is shrunken; he was very sick for a time and once had lost all hair of the head on the side of the injured eye, but he never developed any sign of sympathetic ophthalmia.

In one rabbit only into whose left eye I had injected a quantity of an infusion of *abrus precatorius* of about 3 per cent., the experiment seems to have been absolutely successful, as regards the production of an inflammation of the uveal tract in the uninjured eye (sympathetic iritis). The injured eye became greatly inflamed a few hours after the injection, and the symptoms of panophthalmitis were fully established on the second day. In the morning of the third day the uninjured eye appeared somewhat dim, and its episcleral blood-vessels were hyperæmic. At noon the iris looked swollen and had lost its lustre, the pupil was contracted, and within it a thin film of exudation was just visible. In the evening the symptoms of a plastic iritis were perfectly established, but the animal sank rapidly and died with convulsions about an hour after I had demonstrated him before the society of German Physicians of St. Louis. When at noon I had attempted an ophthalmoscopic examination, this, on account of the dimness of the media, was no longer feasible.

I dissected the eyes, optic nerves, chiasma and the adjacent parts of the brain and hardened the whole specimen in Mueller's fluid, and later on in alcohol. Of these part I gave the chiasma and most of the orbital part of the optic nerves to my friend, Dr. L. Bremer, for examination. The description of these parts being from external reasons at present not in my hands, will follow at some later date. The lack of this link is not detrimental to the end in view, since, as the reader will see, the peculiar conditions of other parts of the two eyes, examined by myself, are in themselves of very great importance for the solution of the question, by what channels the inflammatory process can travel from one eye to the other.

Macroscopical Examination.—The injured eye, when cut into two halves, showed the following conditions. The cornea and sclerotic appeared normal. The anterior chamber was filled

with a coagulated exudation which was firmly adherent to the anterior surface of the swollen iris. A similar exudation filled the posterior and vitreous chambers, and the crystalline lens was thus firmly embedded in it.

After removing the exudation from the region of the optic nerve entrance, the optic papilla, which in the normal rabbit's eye is excavated considerably, and much more so than in the human eye, was found to be swollen and even protruding into the vitreous chamber.

The macroscopical conditions of the not injured eye were about the same, but the character of the inflammation was a milder one. There was also a coagulated exudation lying upon the anterior surface of the iris and in the pupillary area, which appeared like a newly formed iritic membrane. The vitreous chamber also contained some coagulated exudation which, however, did not nearly fill this space. The optic papilla was less excavated than in the normal rabbit's eye, but its outer half only protruded slightly into the vitreous chamber.

Microscopical Examination of the Injured Eye.—The conjunctival tissue at the limbus conjunctivæ is considerably swollen and infiltrated with round cells. Its blood vessels are hyperæmic. The corneal tissue is nearly normal. The exudation which fills the anterior chamber is very peculiar in its appearance. It consists chiefly of a fine network of minute threads of fibrine, forming very small meshes, embedded in which is a moderate number of lymphoid cells. It perfectly resembles the picture as found in cases of "spongy" exudation in the anterior chamber in hemorrhagic iritis, or of a croupous membrane. Although I have examined a great many pathological rabbits' eyes, I have never before seen this form of exudation in any of them. There can, therefore, remain no doubt but that this peculiar form of exudation is here due to the foreign substance employed, namely, the infusion of *abrus pectoratorius*, which, as we know, also produces a croupous exudation upon the conjunctival surface.

The tissue of the iris is in a state of acute inflammation; it is swollen, infiltrated with round cells, and its blood-vessels are filled to the utmost with blood. Exactly the same is to be said of the ciliary body and the choroid. The exudation which fills

the posterior and vitreous chambers is virtually the same, if I may say so, *croupous* exudation which we found filling the anterior chamber.

The optic nerve, as far as I have examined it, shows throughout the signs of interstitial neuritis of a very high degree. The optic papilla is œdematous, the optic nerve and the papilla are filled with hyperæmic blood-vessels, some of which are probably newly formed.

The tissue is greatly infiltrated with round cells, especially the connective tissue tracts. In some places small hemorrhages have taken place. The sheaths of the optic nerve, especially the arachnoid, show an abnormally large amount of nuclei, and now and then, especially in transverse sections, a patch of the peculiar croupous exudation is found within the intra-vaginal space.

The orbital tissue adhering to the posterior surface of the eyeball and to the optic nerve sheaths is also hyperæmic, greatly infiltrated with round cells, and also contains nearly everywhere this croupous exudation.

Microscopical Examination of the Eye Secondarily Affected.—The exudation lying upon the anterior surface of the iris and in the pupillary area of the injured eye is of exactly the same croupous character as is the one found in the injured eye, namely, it consists of a fine network of minute fibrinous threads and contains a moderate quantity of lymphoid cells within its meshes. The tissue of the iris is in a mild state of inflammation, being filled with round-cells and swollen. Its blood-vessels are mostly empty, but their walls in many places contain round-cells in the act of emigration, or they are surrounded by round-cells that have already emigrated.

The ciliary body and the choroid, especially the latter membrane, show more decided signs of an active inflammation, and the choroidal blood-vessels are highly hyperæmic. In the supra-choroidal space near the entrance of the optic nerve the croupous exudation is again present and the contents of the vitreous chamber near the optic nerve entrance bear the same characteristics, though less marked.

The optic nerve and optic papilla show well pronounced signs of an interstitial neuritis. Their blood-vessels are hyperæmic

and the tissue of the nerve (especially the connective tissue) abounds with lymphoid cells. The sheaths of the optic nerve have an abnormal quantity of nuclei, and now and then a microscopical patch of croupous exudation is found lying in the intravaginal space.

The remaining part of the physiological excavation of the optic papilla is filled with coagulated fibrine, into which newly formed blood-vessels are seen to enter. Near these latter and farther on small clusters of round-cells are found lying. The orbital tissue also shows the croupous exudation.

The ciliary nerves of the secondarily affected eye show no pathological changes.

Epicrisis.

The question whether in cases of sympathetic ophthalmia the inflammation, as such, travels from one eye to the other, seems to me to be satisfactorily settled by the condition of the two eyes described in the foregoing lines.

The material I happened to make use of, in order to produce a severe inflammation in one eye, has brought about an exudation so peculiar in its character, that the fact of finding the same peculiar characteristic exudation in the secondarily affected eye, clearly proves that the irritating substance must have traveled from the injured eye to its fellow. (This exudation is, moreover, found in the tissue of both orbits and in the intravaginal space of both optici, although here only in small patches).

The short time (three days) in which these changes have occurred, furthermore, would, it seems, prove that reflex-action by way of the ciliary nerves could not in this case have been the factor which brought about the sympathetic inflammation.

But besides the characteristic exudation, we have found that there is also an interstitial neuritis of *both* optic nerves with swelling of the optic papilla (choked disc).

From all these facts there can be no doubt, that *in this experimental case of sympathetic ophthalmia the material which caused an inflammation in one eye, as well as the resulting inflammatory process, have both directly traveled from the injured eye to its fel-*

low, and not by the sheaths of the optic nerve alone, but also by the optic nerve itself.

With the statement of these facts, I will end this paper, and not go into any speculations. Further experiments and the microscopical examination of a number of specimens which I have already obtained will, I trust, at a future time enable me to help in the clearing up of other doubtful and important points of this interesting matter.

CLINICAL NOTES OF CASES OF FOREIGN BODIES LODGED IN OR ON THE IRIS, AND IN THE ANTERIOR CHAMBER.

BY CHARLES J. KIPP, M. D., NEWARK, N. J.

In seven of the following cases the foreign bodies were situated either in, or on the iris and had not injured the lens capsule. In six of these cases the foreign substance was iron or some other metal and in one case it was a piece of stone. In all of these cases the extraction of the foreign body was followed by complete recovery.

To these cases I have added three others, in one of which the foreign body, a piece of a gun cap, was spontaneously expelled from the eye, four years after its entrance. In the two other cases the foreign bodies, a large piece of straw and a bird shot, lodged in the anterior chamber for years without causing irritation.

CASE I.—A Fragment of Steel in lower part of Iris. Removed with Iridectomy, eight days after Entrance. Recovery.

T. H., æt. 31, was struck in the left eye seven years before he came under my care. He was suffering much pain in eye. There was considerable ciliary injection all around the cornea, but most marked at the lower margin. The cornea was transparent, except at wound-entrance, where it was hazy. The wound was situated close to the inner lower margin. It measured

but 3 mms in length. The anterior chamber was of normal dimensions. The aqueous was slightly turbid. The foreign body, a piece of steel and apparently not thicker than paper, 4 mms. in length and less than one mm. in width, rested on the iris about midway between lower periphery and pupillary margin. The iris tissue was somewhat swollen and discolored. On the following day the patient was put under ether and a small incision made in the cornea below the foreign body, with a narrow knife. After several unsuccessful attempts the foreign body was extracted with a fine grooved forceps. During these manipulations the iris was considerably bruised and it was therefore thought best to excise the part on which the foreign body had been situated. This operation was followed by a mild iritis with fibrinous exudation from which the patient entirely recovered in the course of ten days. An examination of the vision of the injured eye made six weeks later showed, that it was $S=\frac{5}{6}$.

CASE II.—*A Piece of Soft Solder in the Iris. Extraction Sixteen Hours after Accident. Complete Recovery.*

P. J. æt. 50, while directing some workmen in repairing machinery felt something strike his right eye. He involuntarily rubbed his eye and as it seemed all right a few minutes later thought that the substance which struck the eye had fallen out again. About two hours later, during the night, his eye became so painful that he was unable to remain in bed. He went to a physician in his neighborhood who brought him to me at 5 o'clock in the morning. I found a very small wound in the cornea near centre; the anterior chamber was of normal dimensions and in upper inner quadrant of iris, about midway between pupillary margin and periphery was seen a metallic body, about the size of a small pin's head. The eye was otherwise entirely healthy. There was much photophobia and lachrymation, but only slight ciliary injection. I advised an operation for the removal of the foreign body and performed the operation about sixteen hours after the accident. The operation was done without ether. The incision in the cornea was made at inner upper sclero-corneal margin and measured about 4 mms. After several unsuccessful attempts to seize the foreign body with forceps, I

grasped the iris on both sides of the body drew it out of the corneal wound and cut it off. The operation was followed by only very slight reaction. Eight days later the patient was out, and the sight of the eye was $\frac{2}{3}$; five years later the eye remained in the same condition. The foreign body was found to be a piece of soft solder.

CASE III.—Fragment of Iron in Iris. Iritis on Following Day. Iridectomy on Second Day. Complete and Speedy Recovery.

Mr. Van R., æt. 40, came to me two hours after he felt something strike his eye. At the time of the accident he was driving a nail in a hard-board, and on examining the head of the nail found that a piece of it was gone. He was not suffering any pain in eye but his sight was blurred. I found an irregular wound near centre of cornea, the anterior chamber was evacuated, and in upper outer quadrant of iris was seen a piece of glistening metal about 3 mms. in length and about one half of a mm. in width, it was apparently embedded in the iris tissue. There was but little irritation. Sight was not examined. I applied a pressure bandage, and urged the man to let me remove the foreign body in the afternoon of same day, but he declined to have an operation made. In the afternoon of the following day I was called to his house as he was suffering much pain in eye. I found the cornea hazy especially in the vicinity of the wound, the anterior chamber was restored, the aqueous was very turbid, and the iris swollen and discolored. The foreign body was no longer visible, but in its stead, a whitish granular exudation was seen at the place occupied by the foreign body on the day before. I at once put the patient under ether and made a large iridectomy upward and outward. I placed a branch of the forceps on each side of, and a little below, the whitish exudation and thus withdrew the foreign body with the iris. On the following day the cornea was much clearer, the aqueous was transparent and the iris was of normal color. A week later, the eye was white and all symptoms of the kerato-iritis had disappeared. S was slightly impaired by the central scar in the cornea. Three

years later the sight was as good as before the accident. The foreign body was found to be a piece of iron.

CASE IV.—*A Piece of Iron on Iris. Extraction of Foreign Body, five weeks after Accident. Recovery.*

J. G., æt. 21. Five weeks before I saw him for the first time, he felt something strike his eye while he was hammering. Until very recently he was free from pain. On examination I found considerable ciliary injection around the entire cornea. Cornea was clear except in lower part where there was a linear scar about 3 mms. in length. The anterior chamber was of normal dimensions. The aqueous clear. Iris of normal color and texture. The foreign body, a piece of iron about 4 mms. in length and one mm. in width was lying free on the iris about 1 mm. from inner margin just below the horizontal meridian. The pupil was free and active. An operation was advised but declined. Eleven days later the patient returned. With exception of increased ciliary neuralgia the condition was as above stated. On the same day I made an incision with a lance-shaped knife, about 4 mms. in length, almost over the foreign body; grasped this with forceps and extracted it. There was no prolapse of iris and pupil remained perfectly round. The wound healed by first intention. No iritis developed. Sight was as good as before the accident.

CASE V.—*A Piece of Iron on Iris. Extraction without Iridectomy. Recovery.*

W. H., æt. 45. Foreign body entered eye two days before I saw him. I found a linear wound with yellowish lips between the outer margin and centre of cornea. Cornea around wound hazy. Anterior chamber of normal dimensions. Iris discolored but not much swollen. Pupil small. The foreign body was found on the iris near outer periphery. It was a thin piece of iron about 3 mms. in length and 1 mm. in width. On placing an electro-magnet on cornea over foreign body, this came forward and with it the iris. I made an incision about 3 mms. in length, with a lance-shaped knife, a little below the foreign body, and although the knife was quickly withdrawn all the aqueous escaped. Several attempts to draw out the foreign body with the

magnet having failed, I removed it with the forceps. The iris did not prolapse. Eserine was instilled. Ten minutes later the pupil was found to be very small and round. The operation was followed by no reaction and the wound of entrance healed speedily, leaving only an insignificant scar. A week later sight was as good as in the other eye, and the pupil free.

CASE VI.—*A Fragment of Iron on Iris. Extraction with Magnet. Recovery.*

J. P. S., æt. 35. Was struck in right eye by a piece of iron half an hour before I saw him. The eye showed slight ciliary injection. In cornea near outer margin was a small linear wound, otherwise it was clear. The anterior chamber was of normal dimensions and the aqueous was transparent. The iris was of normal texture, close to inner periphery a little above the horizontal meridian, a piece of metal about 5 mm. in length and less than a mm. in width, was seen to stick with one end in the iris while the other was projecting full in the anterior chamber. Two hours later the foreign body was found lying flat on the iris in the same position. On applying the electro magnet to the cornea over the foreign body, this flew up against the cornea, and was then moved by the magnet to the lower half of the iris about midway between the periphery and the pupillary margin. Here I made a small oblique incision in the cornea, and withdrew the knife so quickly that but a small quantity of the aqueous escaped. I then introduced the point of the magnet into the wound, and on withdrawing it found the foreign body hanging to it. Eserine was instilled immediately afterward, and a bandage applied. A few hours later the pupil was found small and round. The wound healed by the first intention. No iritis followed. A week later the patient was discharged from the hospital, and now six months later his sight in this eye is perfect.

CASE VII.—*Burn of Cornea. A Fragment of Stone on Iris. Extraction on Second Day. Recovery.*

R. B. æt. 23, had his face and left eye burned by the premature explosion of a mixture of powder and sand two days before

he came to me. I found chemosis and intense injection of the ocular conjunctiva. The whole cornea was hazy and rough especially in central part. A little above centre of cornea was an irregular wound. The anterior chamber was rather shallow; the aqueous was muddy, and a moderate hypopyon occupied lower part of anterior chamber. The iris was swollen and resting on it in upper outer quadrant, about a mm. from pupillary margin was seen a foreign body of about the size of a large pin's head. As far as could be ascertained the lens was not wounded. On the same day I made a small iridectomy upwards, withdrawing the foreign body with the iris. Under the protective bandage and atropine the eye speedily recovered. Two weeks later the patient was discharged without impairment of vision.

An analysis of the above cases shows that symptoms of iritis showed themselves very soon after the lodgment of the foreign body in four of the cases; in one of these swelling of the iris is noted as present three hours after the accident. In the remaining three cases only hyperæmia of the iris existed at the time the patient came under observation; one on the second day, one on the third, and one in the fifth week after the entrance of the foreign substance in the eye.

Why in one case a foreign body should cause the development of an iritis very speedily after its lodgment, while in another the prolonged contact of the metallic body with the iris failed to produce even a morbid hyperæmia, it is difficult to understand. As the foreign bodies in the above cases were all nearly of the same size, and consisted of iron or sand, the mechanical and chemical effects produced by them in the iris can not have differed sufficiently to account for the different degrees of reaction witnessed in these cases.

The experiments made by Leber¹ on rabbits have shown that sharp pointed, aseptic fragments of steel carefully introduced into the anterior chamber do not produce inflammation of the iris, and the inference seems, therefore, very natural that if an inflammation follows the lodgment

¹ Græfes' Archiv. f. Ophthalmologie) Bd. xxx, Abtheil. 1. p. 246.

of a piece of iron in the iris that the foreign body has taken with it septic matter into the eye. No one has, however, as yet, proved that such is actually the case. On the other hand Leber's¹ examination of foreign bodies immediately after their extraction from the eye and of eyes containing foreign bodies immediately after excision, have thus far failed to discover micrococci or other parasitic elements within the foreign bodies or in the tissues, and the inflammatory product in which these were situated.

With regard to the treatment employed in the above cases, I have but few words to add. Believing that in every case in which the eye shows signs of irritation, nothing short of the removal of the foreign body will avert further damage to the eye, I have never lost time in trying to subdue the irritation by other means. In several cases I operated while the iris was intensely inflamed, and in all but one of these the iritis subsided speedily. In the case in which it did not, the iris was much bruised, in consequence of insufficient size of corneal wound. Wherever practicable, I have extracted the foreign body without an iridectomy, except in cases with marked iritis. In these the iridectomy seems to exert a favorable influence. For the removal of the foreign body I have used mostly a pair of very delicate grooved forceps in cases where the foreign body was entangled in the iris, and Knapp's foreign body hook, or an ordinary blunt hook, when the body was lying on the membrane. Very little difficulty will attend the removal, provided the incision in the cornea is sufficiently large. I have usually made the incision with a narrow knife, sometimes with a Beer's cataract knife, which seems best adapted for cases requiring a large opening. Pieces of iron and steel can doubtless be extracted with the magnet in many cases, especially if there is an anterior chamber.

A small and oblique incision in the cornea and the quick withdrawal of the knife, so as to prevent as much as possible the escape of the aqueous, seems desirable if the foreign body is so situated that the incision can not be made close to it. With a powerful magnet (I prefer Bradford's electro-magnet) the foreign body may be drawn from a considerable distance, provided some

1 Op. cit. p. 249.

aqueous remains, and it is therefore only necessary to select a point of sufficient size to fill the opening in the cornea and to push it only a short distance in the anterior chamber to make sure of getting the iron into the wound where it can be removed with forceps. Should iris prolapse, it may be cut off or returned into the anterior chamber, if this can be done without much bruising. Eserine should be applied at once if no iritis is present.

CASE VIII.—*A Large Piece of Stone in Anterior Chamber for two Years without Producing Disturbance.*

The patient, an Italian laborer, æt. 45, came to the Newark Charitable Eye and Ear Infirmary, for treatment of a scald of his right eye. On examination the cornea was found to be very hazy in lower half, and the epithelium of this part destroyed. The lower third of the anterior chamber was filled with a mass, the exact nature of which could not be made out. It looked, however, like a fibrinous exudation around a thin piece of metal, the sharp edge of which was apparently projecting slightly through the upper surface of the exudation. The upper part of the iris was normal. The pupil was free and active. No injury of lens or deeper parts. As I was unable to discover a wound in the cornea, and the patient was not able to converse in a language with which I am familiar, I deferred the making of a diagnosis until an interpreter could be obtained. It was then learned that the eye was wounded two years before in an explosion in a mine. That he was treated for months in a hospital in Canada and discharged after the inflammation had passed off. The mass in his eye he noticed shortly after his departure from the hospital, but as it did not give him any inconvenience had not considered it worth while to consult a surgeon with regard to it. On close examination I now found a long linear scar at the lower outer sclero-corneal junction.

After his recovery from the scald I removed the foreign body in the following manner: Hoping to be able to pass a narrow knife behind what I still thought to be an exudation around a foreign body, I entered the knife at outer margin of cornea, 2 mm. below horizontal meridian, with the intention of making the counter-puncture at inner margin, but had advanced only

a short distance when the point of the knife came in contact with the mass, which felt as hard as stone. Finding it impossible to advance the knife any farther in the direction I had intended to take, I withdrew it partially, then directed the point downward and made a small incision in outer lower margin. I next enlarged the incision with a strong pair of strabismus scissors to about one fourth of the circumference of the cornea. I then grasped the end of the mass nearest the outer margin with anatomical forceps, and withdrew it lengthwise without the slightest difficulty. A tag of iris prolapsed and was abscised as it was found impracticable to reduce it. The wound healed in the course of a week, and the eye has since then given him no trouble. The foreign body was found to be a piece of granite.

CASE IX.—A Bird Shot in Lower Part of Anterior Chamber for Eight Years, without Causing Irritation.

C. H., *et.* 13, I saw for the first time eight years ago. Three days before her visit to me she had been shot in the left eye. Several pieces of shot were lodged in the lids and one in the ocular conjunctiva. At upper sclero-corneal junction was a prolapse of iris, about the size of a lentil. The cornea was clear. The anterior chamber filled with blood. I removed the pieces of shot in the lid, and in the conjunctiva, and abscised the prolapsed iris. Under cold applications and atropia, the blood was absorbed in a short time. It was now seen that the lens had been injured, as cataract was developing, and in lower part of anterior chamber was found a round body similar to the shot previously removed. Nothing further was done. Since then I have seen the patient from time to time. The eye now diverges. There is a membranous cataract to which the pupil is adherent and the shot remains in the same position. At no time has this eye shown signs of irritation since the injury, and I have, therefore, not felt called upon to interfere. The eye has good perception of light, but the visual field is deficient downward, and I shall have no hesitation in removing the eye if symptoms of inflammation develop.

CASE X.—*Spontaneous Expulsion Through the Cornea of a Large Piece of a Gun-cap Four Years After its Entrance into the Eye.*

F. J. U., *et.* 24, states that four years ago a piece of a gun-cap struck his right eye. Considerable inflammation followed. Since then he has been blind in the eye. Until recently the eye has given him no further trouble. Now he has pain. There is considerable ciliary injection, especially in upper part. In lower part of cornea is a triangular scar, and at upper sclero-corneal junction is situated a yellow pustule about the size of a split pea. The cornea adjoining is hazy, but otherwise it is clear. Connected with the yellow pustule mentioned is a mass of pus, which hangs in upper part of anterior chamber. The iris is discolored. The pupil excluded. Cataracta acreta. Perception of light fair. Visual field intact. I ordered warm fomentations and instillation of atropia. Two days later all pain had left the eye, and the mass of pus in upper part of anterior chamber had fallen to the bottom. Otherwise there was no change. Patient was told to come again in a few days, but remained away for seven months. He now felt something sharp scratching the upper part of the eye and wished me to remove it. I at once saw that the pustule had broken and a sharp point protruded from it. Examination showed the foreign body to be metallic. Careful traction failed to dislodge it, and I therefore placed the patient under ether, enlarged the opening with scissors, and withdrew the foreign body, without difficulty. No aqueous or vitreous escaped. The wound healed kindly in the course of a week. Subsequent examinations have left it undecided as to where the foreign body was situated. The iris is adherent to cornea a mm. below upper corneal margin, and it is therefore very probable that it lodged partly in iris and partly in lens. The foreign body was a thin piece of copper. 4x3 mms.

It seems most probable that in this case the foreign body was encapsulated for about four years, then a rupture of the capsule occurred from some cause or other and a new localized suppuration set up by the fragment of copper in its vicinity, which led to perforation of the cornea.

Instances of the spontaneous expulsion of foreign bodies from the eye must be very rare, as I have been able to find but one case on record. This is reported by Dixon, in *Dublin Quarterly Journal*, 1848, p. 210. I have been unable to read the case in the original, but from the excerpt given by Cooper in his book "On Wounds and Injuries of the Eye, London, 1859," it appears that in Dixon's case a piece of gun-cap was expelled eight years after its entrance.

[The Editor of this journal reported a similar case in the Archives of Ophthalmology and Otology, Vol. VI. No. 1 and 2, p. 207.]

CLINICAL OBSERVATIONS.

BY L. WEBSTER FOX, M. D.,

Ophthalmic and Aural Surgeon to the Germantown Hospital, Philadelphia.

CASE I. *Acute uni-ocular neuritis*. On February 15, 1883, Wm. Pinkerton, æt. 20, presented himself at the eye clinic with the following history. For the last two weeks noticed a dimness of vision in the left eye. The haziness has increased markedly the last week, and has had headaches; the last two days severe pain in the head which, however, cannot be localized, no nausea; no pain in the eye-ball, neither is the eye sensitive to light. Pupils respond to light and accommodation.

Vision R. E. = $\frac{20}{20}$. J. No. 1 at 8"

" " = $\frac{20}{200}$ (?). J. (?). No. 19 at 8"

Refuses glasses. With ophthalmoscope the media of the right eye, clear and no lesion in fundus, arteries and veins of normal calibre, retina reflecting the "watered silk" appearance. Hypermetropia 0.50. D. A well defined halo surrounding the macula, optic nerve slightly pinkish with its sheath sharply defined. In the left eye, the media were clear, but optic disc decidedly swollen (+3.50), marked œdema of retina surrounding

it, veins enlarged and tortuous, arteries much lessened in calibre. Both arteries and veins minus their reflex, vitreous slightly turbid in the region of papilla. The fields of vision and color were contracted 10° with marked diminution of acuity in the center but no scotoma.

No history of syphilis, nor abuse, could be elicited. He was otherwise healthy and well developed, and led a temperate life. Family history irrelevant.

The following treatment was ordered: Inunctions of hydrarg. one dram to be rubbed on the tender parts of his shin twice daily. Internally, Hydrarg. bichlor. gr. $\frac{1}{48}$; Potass. iod. grs. x; aq. dest. \mathfrak{z} j, three times daily. Prescriptions given for ung. hydrarg. \mathfrak{z} j and mixture \mathfrak{z} ij.

The patient did not return to the clinic for eight months. Then, by request, he informed me that the ointment was applied and medicine taken as directed. On the third day after commencing the use of the drugs, there was a decided metallic taste in his mouth and vision began to improve. At the end of three weeks, the patient said there was no apparent difference in the visual acuity of either eye. Owing to this improvement, patient did not think it necessary to return to the hospital. He took the medicine, applied the ointment but did not have the prescription re-filled. There was no salivation. In response to a request, the patient presented himself at the clinic December 20, eight months after the first visit, when the following entry was made in our case-book. Right eye normal in every respect. Left eye vision $\frac{2}{3}$, J. No. 1 at 8", sph. +0.25 D sharpens distant vision—pupil active and media clear, arteries and veins normal in calibre and edges sharply defined even to their entrance into the optic nerve, which has a pale color, sharpening the outline of its sheath. No other change noticed.

The "watered silk" reflex from the retina (?) and the halo around the macula present but not as pronounced as in right eye. Field of vision normal and color-perception good.

May 10, 1883. Patient writes, eyes are normal in every respect—and has had no headaches since week prior to his visit to the hospital.

The interest in this case lies in its rapid recovery under the

influence of a very small quantity of mercury. The arrest of exudation in and about the optic nerve, preventing nerve fibre change; restoration of the function of the eye; the complete absorption of the exudative material, deposited in and around the papilla; the "watered silk" reflex of the retina returning and the bloodvessels recovering their normal calibre. The patient being of a robust nature, aided by the stimulating and alterative powers of the hydrarg. developed resisting force to repel the pathological products, which otherwise might have endangered the vision of his left eye.

CASE II. *Quinia Amblyopia cured by the internal Administration of Hydrobromic Acid.*

H. S., æt. 13 years, was brought to me on account of a sudden loss of vision in both eyes. The lad had had an attack of malarial fever which had assumed a chronic form. Quinia Sulph. had been administered in large and continued doses, producing cinchonism twice during an interval of three months. It was during this last condition that amblyopia occurred. Vision at this time equaled $\frac{2}{20}$. No limitation of visual fields, neither was there color blindness. There was no marked lesion in fundus oculi, other than a slight hyperæmia of the retinae.

The patient was now apparently free from the malarial poisoning although his general condition was much below par. Acid hydrobromic (Squibbs), fifteen drops administered three times daily. There was a change in his vision for the better, observed after the third day. His sight continued to improve, at the end of two weeks $\frac{2}{20}$ obtained for distance while J. No. 2 at 10" read quite easily. The dose of the acid was decreased to five drops thrice daily, which was continued for a fortnight. Quinia sulph. was not taken during this treatment. The patient regained his strength and has up to the present been free from the malarial trouble and vision remained normal. We have found in many cases where quinia has produced tinnitus aurium the administration of hydrobromic acid will prevent this unpleasant symptom becoming manifest.

CASE III. *Sarcoma of Choroid. Enucleation of Eye-ball.*

J. M., æt. 69 years. About two years ago first noticed a fail-

ing of vision on the nasal side of the left eye; this gradually grew worse, till at present he has peripheral vision only, a speck of light on the temporal side. His father was blind in one eye "something grew out of the sight," A sister (older than the patient) became blind in one eye, died shortly afterward; a niece had a daughter who died from a tumor of the brain; other than this his family had no hereditary taint.

Right eye was normal.

Left eye vision almost *nil*, conjunctiva congested, abnormal vessels, well marked on the upper and temporal side of eye-ball.

Tension —, with pupil dilated ad maximum by oblique illumination a yellowish reflex could be obtained showing close proximity to the posterior part of the lens of a growth in the vitreous. This body extended beyond the posterior pole of the lens. Several dilated blood vessels could readily be traced. By direct illumination the growth assumed a greyish color. The eye-ball was enucleated. When it was carefully cut through its equator with a razor, a large rounded growth was found springing from the choroid, on the temporal side of the globe, extending forward to the ciliary bodies, backwards to the optic nerve and almost completely filling the interior of the eye-ball. The retina had been changed; that part covering the tumor thickened, while the part on the nasal side was in place and seemingly normal. The retinal vessels had assumed the condition of the retina.

A microscopical examination of the tumor proved it be a small round cell sarcoma, melanotic in character. No disturbance of the optic nerve.

RETINOSCOPY.

BY A. R. BAKER, M. D., CLEVELAND, OHIO.

Dr. Cuignet in 1874 was the first to publish a systematic article on this subject, under the unfortunate title of Keratoseopy. Dr. Parent suggested the name of Retinoseopy, as the appearance presently to be described is due to the play of light and

shade on the retina. To Dr. Forbes in the *Ophthal. Hos. Rep.*, Vol. X., pp. 62, is due the credit of first calling attention to this subject in England.

Retinoscopy is now practiced in the London hospitals by placing a good light, such as is used in an ophthalmoscopic examination, above the head of the patient in the dark room; the observer sitting directly opposite at the distance of about four feet. A slightly concave mirror one and a half inches in diameter with a central perforation is used. Direct the patient to look past your left ear to the wall beyond, if the left eye is to be examined, and vice versa if the right, which usually relaxes the accommodation. With a little experience you can tell by the contracting and dilating of the pupils, under the influence of light, whether the eye is accommodating or not.

By looking through the perforation, throwing reflected light into the eye, and slowly rotating the mirror, if the eye is emmetropic there will be seen a decided shadow moving opposite to the direction the mirror is rotated in, moving equally in every direction.

Beginners usually make the mistake of moving either their heads or the mirror in various directions instead of rotating the latter. It is also necessary to have your own error of refraction, if any be present, corrected by suitable spectacles or you will add yours to that of your patient. Care must be taken to have the patient's head held perfectly straight and the spectacle frames carefully adjusted so that they centre correctly.

Now if a $+1. D$ is placed in the frame in front of the eye and the mirror rotated as before, and no shadow can be seen in any meridian, we can say confidently, the eye is emmetropic. If there is a shadow moving opposite, alike in every direction, we have a case of simple hypermetropia. If we have a shadow moving opposite in one meridian and none in the other we have a case of simple hypermetropic astigmatism. If we have a shadow moving opposite in both meridians, but faster in one than the other, we have a case of compound hypermetropic astigmatism. If the shadow moves with the mirror equally in every meridian, we have a case of myopia. If the shadow moves with the mirror in one meridian and the $+1. D$ neutralizes it in

the other, we have a case of myopic astigmatism. If the shadow moves with the mirror in one meridian, and opposite in the other, we have a case of mixed astigmatism.

The amount of error of refraction is easily determined by placing spherical lenses in front of the eye until the shadow is neutralized.

If it requires a + 4. D. s. to neutralize the shadow in every meridian of a given case, we have 3. D. of hypermetropia. If it should require a + 1. D. to neutralize the shadow in the vertical meridian and a + 3 D. in the horizontal, we would require a + 2 D. c. axis 180 to correct the astigmatism. Or in another case it may require a + 2. D. to neutralize the shadow in the horizontal and a + 5. D. in the vertical meridian; this case would be corrected by the following + 1. D. s. \bigcirc + 3. D. c. axis 90. Cases of myopia are worked out in the same manner. If a given case requires a + 1. D. in the vertical a — 3. D. in the horizontal meridian, it is corrected by — 4. D. c. axis 180. Or another requires a — 2. D. vertical and a — 3. D. horizontal and is corrected by — 4. D. s. \bigcirc — 1. D. c. axis 180. I not infrequently meet with cases like the following and I am quite certain many cases of irregular astigmatism which I was unable to correct satisfactorily either to myself or to the patient were belonging to this class: Vertical meridian requires a + 3. D. horizontal a — 4. D. and is easily corrected by a + 2. D. s. \bigcirc — 5. D. c.

The literature of this subject is yet very incomplete, and from this imperfect description retinoscopy may appear somewhat difficult to one who has not attempted it. Practically it is very simple, just as easily done as neutralizing a concave with a convex lens. The principle is in fact about the same. Any one may become an expert with a little practice.

It is to be remembered that the same principles should govern us in prescribing the spectacles to be used as after determining the refraction by any other method. I presume that we have all learned sometimes by a not very pleasant experience that the lenses which correct the refraction theoretically, often practically are worse than useless. The peculiarities, temperament, previous habits, general condition, age, occupation, and a number of other questions must all be decided before ordering the spectacles.

One among the many advantages of retinoscopy, is, that we need not depend upon the statements of the patient; with children and ignorant persons who do not know their letters, it is almost indispensable. We are often able to fit spectacles to children with commencing strabismus and avoid the necessity of an operation. In cases of astigmatism, patients who have never seen things in their right proportions and whose statements always have to be taken with a grain of allowance, it saves a large amount of annoyance. The saving of valuable time is an important consideration. Cases which I formerly kept under the influence of atropia for weeks and found it necessary to give five or six sittings of long duration which tried the patience of both myself and patient, I am now usually able to dispose of at one sitting of short duration much more satisfactorily.

It does away with the use of atropia in a large percentage of cases. In cases of spasm of the accommodation it is, however, necessary to paralyze the ciliary muscle and in many other cases it is much easier to have the unknown quantity of accommodation out of the way, yet I do not find it necessary to use atropia once, where I formerly used it ten times.

THE VALUE OF PUPILLARY SYMPTOMS IN GENERAL DISEASE.—AN ANALYSIS OF ONE THOUSAND CASES.

Abstract of an Address on Ophthalmology read before the Pennsylvania State Medical Society, 1884.

BY W. S. LITTLE, M. D., PHILADELPHIA, PA.

Hospitals for the chronic forms of disease were the first to open their doors to the ophthalmic surgeon, who had been restricted to special hospitals; the result of observations made in these institutions, in working out the eye symptoms, associated with many chronic diseases, soon had their influence in placing an ophthalmic surgeon in hospitals for acute disease. The past twenty years have seen this development of ophthalmic medicine

in this country at least. The eye and ear hospitals of the present time in several of our large cities have a throat, skin and nervous department attached.

Diseases affecting the *nervous* system have received the greatest benefit from the development of ophthalmic medicine. The leading contributions to ophthalmic medicine have been from Germany and England.

Medical education shows the advancement of it, and post-graduate schools have resulted from the success of practical courses given in ophthalmic hospitals.

Medical ophthalmoscopy has been the leading factor in developing ophthalmic medicine. The cases of acute diseases described by Allbutt in his work: *The Ophthalmoscope*, afford a pathological ophthalmoscopic picture in 89 per cent. of the cases; in insanity in 81 per cent. Noyes found lesions in the fundus of the eye in 73 per cent. of the cases examined by him at the Utica Insane Asylum, N. Y.

Among Gowers' cases reported in his work: *Medical Ophthalmoscopy*, it appears in all the cases. In my study of the cases at the Feeble Minded Institution for Children, at Elevyn, Pa., the ophthalmoscope afforded me a picture of diseased condition of the nerve and retina in 13 per cent. of the cases, the age of the patients (youth) and class of diseases rendering the percentage necessarily low.

The study of the visual field for light and color perception yields results of value in diagnosing lesions in the brain. The ocular symptoms of ophthalmoplegia externa and interna have been made more recently an available source of information in studying nervous disorders. The abnormal conditions of the pupil are classified under ophthalmoplegia interna.

The reflex centre for light shows certain variations in some nervous diseases. The study of Allbutt's and Gowers' cases affords me ophthalmoplegia externa present in 14 per cent. of their cases of acute diseases, principally of the nervous system.

Among the cases observed by me at Elevyn and at the Norristown Insane Asylum, Pa., only four cases were seen among six hundred and fifty-eight. Strabismus, non-paralytic, occurred at Elevyn in 15 per cent. of the cases; myopia was prevalent, with

convergent strabismus, and hypermetropia had an existence more than usual in divergent strabismus; whether this may be the result of nervous influences, rather than ocular condition in such cases, we will not now discuss.

Nystagmus was observed in only four cases of the thousand analyzed. The eye-lids were affected in three cases among the thousand studied.

Cycloplegia and iridoplegia combined, are found in spinal disease in 15 per cent. of the cases (Gowers'); in other diseased conditions of the nervous system not so frequently, also in ophthalmic work, seen after diphtheria and fevers. In general paralysis of the insane, W. Bevan Lewis states: that while 15 per cent. of the cases had an immobile pupil, 28 per cent. incompletely so; yet 28 per cent. read Jaeger No. 1 without plus glasses, showing that the muscle of accommodation was not impaired in many cases, while the iris was.

A study of Allbutt's and Gowers' cases, as reported in their works, gave me an impaired action of the pupil in 23 per cent. of their cases. Albutt's and Noyes' cases of insanity, in 5 per cent.

Having obtained their statistics, I undertook the examination of patients at the Feeble Minded Institution for Children at Elevyn, Pa., under the care of Dr. I. N. Kerlin, and at the State Hospital for the Insane, S. E. District, of Pennsylvania, at Norristown, Pa.; Dr. R. H. Chase in charge of the male cases, Dr. Alice Bennett in charge of the female cases. The condition of the pupils was observed in each case without knowledge of the diagnosis made by the physician in charge; after completion of my work, the diagnosis in each case was given and the percentage for the presence of pupillary condition for each disease was made out.

The reputation of the physicians in charge of these institutions, in diagnosing the diseases under their care, render my statistics more valuable; for the facilities granted me I am greatly indebted, and my thanks are due. The cases of Allbutt, Noyes and Gowers were analyzed in the same way.

A thousand cases of different forms of disease, principally of the nervous system, have been collected, and the percentage for the presence of pupillary symptoms for each of the diseases un-

der consideration obtained. I have considered the subject of sufficient importance to bring to your notice at this time. The ocular condition is one readily observed and under certain conditions a valuable symptom in studying disease, having a prognostic value in 67 per cent. of Allbutt's and Gowers' cases, being associated with fatal symptoms.

The statistics of observers as to pupillary symptoms in insanity have varied greatly; this is no doubt due to the non-recognition of intraocular conditions, principally optical defects; Lesser speaks of this; the exclusion of these defects, I believed, would give a more exact and uniform result for extraocular causes. Among the three hundred and fifty cases at Elevyn (youth) I have made this differentiation. At Norristown, insane cases, I have presented only the manifest pupillary states from all causes, extraocular and intraocular, no differentiation being made. Allbutt and Gowers make no statements as to optical defects in their cases. In the address I have given a review of the ancient and modern theories of pupillary movements, founded on the anatomical knowledge existing at the time; the advancement of ophthalmology and ophthalmic medicine is thus exhibited. The anatomy and physiology of the nerves and influences affecting the normal movements of the pupil are stated; the abnormal movements of the pupil are there considered. Methods of studying the pupil are given.

The varieties of pupillary states as produced by disease, given by various authorities are as follows:

Reflex iridoplegia.

Absolute or total iridoplegia.

An immobile pupil.

Myosis.

Inequality of the two pupils.

A variable pupil, a state of spasm.

Hippus.

A classification adopted in my cases and in the statistics, is as follows:

A maximum pupil, bilateral.

An unequal state of the two pupils.

A minimum pupil, bilateral.

An immobile pupil.

A variable pupil, a state of spasm.

Hippus.

Allbutt's, Noyes' and Gowers' Cases.—342 Cases of acute disease and insanity.

Number of acute diseases 18.

Pupil affected in 23 per cent. of the cases. In insanity pupil affected in 5 per cent. of the cases.

Other affections of the eye with pupillary symptoms among 184 cases of acute disease:

Pupil.	Nerve.	Muscle.	Lid.	Affected in	3 cases.
"	"	"	"	8	"
"	"	"	"	34	"
"	"	"	"	5	"

Ophthalmoplegia externa:

Allbutt's cases in 11 per cent.

Gowers' cases in 21 per cent.

Fatal cases with pupillary symptoms:

Allbutt's cases in 68 per cent.

Gowers' cases in 40 per cent.

Diseases in which pupillary symptoms were present, with percentage:

Allbutt's and Gowers' Cases.

Abscess of brain	....	....	....	100	per cent.
Fracture base of skull	....	....	....	100	"
Locomotor ataxia	....	....	....	100	"
Aneurism ant. cerebral artery	....	....	....	100	"
Neuralgia cervical sympathetic	....	....	....	100	"
Fracture of skull	....	....	....	75	"
Facial paralysis	....	....	....	75	"
Lateral Sclerosis	....	....	....	50	"
Mercurial Poisoning	....	....	....	33	"
Sclerosis of brain	....	....	....	33	"
Tumor of brain	....	....	....	32	"
Meningitis	....	....	....	31	"
Concussion of brain	....	....	....	25	"
Spinal Disease	....	....	....	22	"
Lead poisoning	....	....	....	20	"

Hemorrhage in brain	....	....	....	20 per cent.
Epilepsy	....	....	....	13 "
Bright's disease	....	....	....	7 "

Allbutt's and Noyes' cases in Insanity.

Mania	....	....	....	2.5 per cent.
General paralysis of the insane	....	....	....	7.8 "
Monomania and melancholia	....	....	....	5.8 "

Varieties of pupillary states:

Maximum	....	....	....	17.8 per cent.
Minimum	....	....	....	3.8 "
Unequal	....	....	....	—
Spasm	....	....	....	1 "
Immobile	....	....	....	.5 "
Iridoplegia	....	....	....	.5 "

The Institution for Feeble Minded Children at Eleryu, Pa., under the care of Dr. I. N. Kerlin.

367 Cases observed. 17 excluded for disease of the eye.

350 Tested for pupillary condition.

136 Cases affected, or 38.7 per cent.

Intraocular causes omitted as follows:

Squints in	....	....	15 per cent.
Optical defects in	....	....	4.5 per cent.
Disease of retina or nerve in	....	....	1.4 per cent.
Nystagmus	....	....	.5 per cent.

Extraocular causes affecting pupil:

61 cases, or 17.3 per cent.

Males 17.4 per cent.

Females 17.3 per cent.

Optical defects in 50 per cent. of all the cases. Myopia 16 per cent. Hypermetropia 32 per cent.

Varieties of diseases with pupils affected and percentage.

Imbecility	{	High grade	....	....	8.8 per cent.
		Middle grade	....	....	14 per cent.
		Low grade	....	....	12 per cent.
Idio-imbecility	....	....	....	....	28 per cent.
Idiocy	....	....	....	....	41 per cent.
Juvenile insanity	....	....	....	....	20 per cent.
Epilepsy	....	....	....	....	37 per cent.

Varieties of pupillary conditions:

Maximum	....	....	6.2	per cent.
Minimum	....	....	4.3	per cent.
Unequal	....	....	6.5	per cent.
Hippus	....	....	.2	per cent.

Watery silk appearance in eye-ground seen in 9 cases, only 4 of which remained permanent after correcting optical defect by the ophthalmoscope.

Insane Hospital, Norristown, Pa., Dr. R. H. Chase, in charge of male cases; Dr. Alice Bennett in charge of female cases.

308 Cases examined; 39.6 per cent, with pupils affected:

Males 43 per cent.

Females 35 per cent.

These statistics represent manifest pupillary conditions from all causes, except opacity of the media of the eye.

Varieties of Diseases with pupils affected and percentage:

	Males.	Females.	Total.
Monomania,	20 per cent.	— per cent.	16 per cent.
Melancholia acute,	46 “	33 “	41 “
“ chronic,	28 “	11 “	25 “
General paresis,	100 “	100 “	100 “
Dementia chronic,	41 “	37 “	39 “
Mania acute,	57 “	57 “	57 “
“ chronic,	54 “	18 “	35 “
“ recurrent,	— “	50 “	50 “
Imbecility,	— “	25 “	25 “
Epilepsy,	— “	66 “	66 “

Two cases of ophthalmoplegia externa in general paralysis of the insane.

Varieties of pupillary condition:

	Male.	Female.	Total.
Maximum,	11 per cent.	12 per cent.	11 per cent.
Minimum,	14 “	16 “	12 “
Unequal,	16 “	15.5 “	14.6 “
Immobile,	1.3 “	.6 “	1 “

Allbutt's, Noyes' and Gowers' cases, with my own at Elevyn and Norristown.

Males, 602, pupils affected in.....	22.5 per cent.
Females, 398, " " 	24.8 "
Total, 1,000 " " 	23.5 "

Varieties of pupillary condition:

Maximum, 	9 per cent.
Minimum, 	7 "
Unequal, 	6.8 "
Immobile, 	0.4 "
Spasm, 	0.2 "
Hippus, 	0.1 "

OBSERVERS.

Allbutt,	245 cases; pupils affected in....	14 per cent.
Noyes,	37 cases; " " 	5.4 "
Gower,	60 cases; " " 	25 "
W. L. Little	{ At Elevyn, 350 cases; " " 	17.4 "
	{ At Norristown, 308 cases; " " 	39.6 "

Acute diseases in.....23.3 per cent,

Insanity, all grades, youth and old age....23.5 "

A CASE OF SYPHILITIC PERIOSTITIS (GUMMA?) OF THE ORBIT.

BY W. HUNICKE, M. D., ST. LOUIS.

M. R., æt. 29 years, married, mother of two children (one still born, the other a sickly child, gives the following history:

For the last two years patient has been suffering continually with intense headache, especially in the back part of the head.¹ Pain exacerbating towards morning. There had been also a lancinating pain, which increased upon pressure, in the region of the right infra-orbital nerve. About eight months

1. I questioned patient whether she had ever been diseased. She denies it, but admits of having had an eruption all over her body about two and a half years ago. She was then an inmate of a house of ill fame, as I was told by some relatives of hers.

ago patient noticed that the right side of her face was changning—to use her own words, that the “wrinkles had disappeared.” During that time patient was unable to close her right eye, and it seemed to her that the upper lid only dropped down slightly when the attempt was made to close the eye. There was ectropion of the lower lid. Patient found difficulty in closing her mouth, pronouncing labials, masticating her food and retaining her saliva. This facial paralysis came on gradually and disappeared again after two months’ duration, leaving no traces. She had scarcely recovered from the facial paralysis, when she noticed a swelling on the centre of her forehead. The swelling grew slowly until it acquired the size of an ordinary hazelnut. It was round, hard (?) somewhat red and accompanied by severe remitting pain. The tumor, maintaining its size for a few weeks, diminished gradually, and with the diminution the pain began to moderate. During all this time patient experienced a most intense remitting pain in the right orbit. Pains were so severe that she was unable to rest and opiates gave her no relief. As the tumor on the forehead diminished, the pain in the orbit increased and the patient began to see double images, when she looked into a certain direction.

Upon examination, I found that there existed a circumscribed roughness about the size of a dime on the os frontis, occupying the place where the tumor had been. The right eye was protruding from the orbit. The direction of the optic axis when patient was asked to fix an object directly in front of her, was downward and outward, thus causing a divergent squint. Diplopia was heteronymous, in fact binocular fixation occurred only when patient was directed to look downward and toward the right. The eye seemed to be fixed in that position, as there was very little motion either upward or inward.

This was not only plainly visible, but the double images demonstrated the fact. Thus I found no double images, when patient was directed to look toward the right and downward; heteronymous images, when looking towards the right, there being also a difference in the height of the images, i. e., the right lower than the left, and the distance of the images increasing laterally in height, when patient looked upward and toward the right.

In looking straight forward, there were also heteronymous double images and difference in height, which increased when looking straight upward. When looking downward, heteronymous images alone with *no difference* in height could be found.

When looking toward the left, patient was unable to see double images, as the rays of light fell upon the peripheral parts of the retina of the right eye. That the retina was susceptible to light, was proven by excluding the left eye, the patient then gave the directions whence the light came correctly.

The upper lid was hanging down and could not be raised. The margin of the orbit was normal. The upper and inner portion of the orbit was occupied by an apparently round semi-hard tumor, about the size of an ordinary cherry. This tumor was immoveable, broader at the base than at the apex, had a smooth surface and uniform consistency as far as could be detected, the skin moved readily over it. Temperature and appearance of the skin were normal. Pain increased upon pressure.

Anterior portion of the eye and pupillary reaction were normal. No traces of posterior synechiæ. Dioptric media normal. Ophthalmoscopic examination shows a pale optic disc, and margins of disc distinct, (vessels both arteries and veins) anæmic, and a distinct venous pulsation, when patient was asked to look either inward or upward. Patient was put upon anti-syphilitic treatment, receiving two grammes of Potass. iodid. three times a day and mercurial ointment two grammes before bed-time. After twenty inunctions patient began to complain of sore gums. The ointment was discontinued, and iodide of potassium increased gradually up to three grammes three times per day. After patient had been under treatment for one week, pains began to subside rapidly and the tumor in the orbit decreased in size. The eye gradually resumed its proper position in the orbit, and after six weeks the double images had disappeared altogether.

Patient was fed well during time of treatment, regained a healthy appearance, lost pains and was dismissed well, with the advice to continue taking the iodide of potassium.

CORRIGENDA NO. 4.

Page 103, 10th line from below for *straw* read *stone*.

Page 103, 6th line from below for *years* read *days*.

Page 108, 11th line from below for *morbid* read *marked*.

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EXOPHTHALMUS FROM DISEASE OF THE ETHMOID
BONE, THE CONSEQUENCE OF CHRONIC
CATARRH OF THE NASO-PHARYNX.¹

BY J. J. B. VERMYNE, M. D., NEW BEDFORD, MASS.

Miss C. S., æt. 16, a healthy looking young lady, came to consult me a little over a year ago at the advice of her family physician for a protrusion of the right eye, which had been observed for some time. For a few days previous there had been a slight headache. She had been somewhat ailing—but no serious disease had attacked her since her fifth year, when she had a very severe attack of scarlet fever. Since that time she has suffered from chronic catarrh of the naso-pharynx, especially from the right side, with constant muco-purulent or purulent discharge. The eyelids are normal, close normally over the bulb; no dilated veins can be observed. Conjunctiva and externally visible parts of the eye appear normal. There is complete absence of pain in or around the eye; the vision is not disturbed, neither are the movements of the eye interfered with. Vision O. S.=1. E;

¹ Reported before the American Otological Society, July 15, 1884.

O. D. = 1, slightly improved by +0.5 D. The ophthalmoscopic examination shows the disc slightly raised, and the vessels somewhat distended. No pulsation or murmur can be detected by placing the stethoscope over the eyeball.

My first impression was the forming of some neoplasms within the muscle-cone, producing pressure against the globe, and thereby the protrusion and the ophthalmoscopic appearance. Consequently I prescribed Potass. Bromid. and Hydriod. internally and Potass. Hydriod. with Iodine externally and advised slight pressure upon the bulb. My fears of important affection in or around the nervus opticus were increased at the occasion of my second visit, when she had a slight fainting spell. But with this exception she never had any nervous disturbance. The headache, of which she complained at the occasion of her first visit, very soon left her, and, with the exception of the slight deformity from the protruding eye, she felt well.

The absence of pain and of general symptoms and the unobstructed vision first led me to the supposition that some other cause might exist for the exophthalmus, than the one I had at first assumed, namely, a growth behind the bulb. Making a careful digital examination I found a tumor, the size of half a hazelnut, extending from the upper edge of the orbit to a little below the ligamentum canthi internum, gradually sloping backward, as far as the finger could reach. It was of bony hardness, slightly uneven, not painful to the touch, immovable and connected with the os planum, or the lamina papyracea of the ethmoid bone. The lachrymal canals and ducts were patent. It occurred to me that the chronic catarrh of the naso-pharynx was the cause of the present condition. In examining the nasal cavity I found that the patient breathed quite freely through both sides, and, as far as could be discovered, no polypi existed. There is, however, abundant mucopurulent discharge, especially from the right side.

The patient's mother told me at this time, that on different occasions previously, she had observed a peculiar appearance of the right eye, a condition which was usually called "lobster eye." This would last for some days and then apparently recede. Whether this peculiar appearance ever coincided with an

increase of the catarrhal affection, I could not learn. I now changed the treatment, increasing the dose of Potass. Hydriod. omitting the Potass. Bromid. and to advise the use of Potass. Hydriod. with Tinct. Iodine (von Trœltzsch formula) in the nasal cavity, tonics and especially out-door exercise of any kind. Under this treatment the catarrhal trouble has diminished. It was occasionally supplemented by the use of a four per cent solution of boracic acid, when the discharge became purulent, and this is now very rarely the case. The general health has improved, and, beyond the deformity caused by the slight protrusion, there is no complaint. The patient admitted to me afterward, that for a long time she had observed slight diplopia, on opening her eyes in the morning, but which would disappear in a few seconds. Being so slight, it had almost entirely escaped her attention. It still continues, but is not increased. She thinks the eyelids less prominent. Whether this be so or not, I am not able to determine with the necessary degree of accuracy.

The rarity of cases of this kind is a sufficient reason for their publication. Berlin¹ gives the statistics with regard to diseases of the orbit, from 209,185 cases of eye diseases, collected from the yearly reports of 65 institutions. The percentage of diseases of the orbit is 0.19. Of these diseases nearly one-half were pure orbital tumors, while only 2.7 per cent were tumors, originating in neighboring cavities, the maxillary, ethmoid or cranial cavity.

But aside from its rarity the case seems to me to present some points of interest with regard to diagnosis and treatment.

Although tumors, originating in neighboring cavities and gradually encroaching upon the orbit may often be mistaken for pure orbital tumors, there is no difficulty in locating the tumor in the present case, as originating from the ethmoid bone. From its form, the absence of pain and the general good health of the patient, I believe the diagnosis must lie between exostosis and retention tumor.

A case of the latter kind was reported by Dr. Knapp before the International Ophthalmological Congress in New York, in 1876, which I beg leave to repeat here:²

1. Graefe-Saemisch. Handb. d. ges. Augenheilk. VI, 2, p. 504.

2 Report of the Fifth Internat. Ophthalmol. Congress. 1876. p. 55.

"A healthy looking girl of 14 years of age, consulted me in March, 1874. A tumor, the size of a walnut, occupied the region of the inner, upper corner of the orbit, reaching downward a little below the ligamentum canthi internum. Its entire surface felt hard like bone, and was nodular. The tumor was entirely immovable, caused neither pain nor inflammation, but pushed the eye outward and a little downward, without impairing the vision. She breathed through the left nostril without obstacle and her voice had no nasal twang. The tumor had first been noticed three years previously, as a slight swelling, above the inner corner of the eye, had grown slowly at first, more rapidly during the last months, but had never been connected with pain, weakness of sight or any other inconvenience. The disfigurement and the beginning protrusion of the eye caused her to seek relief."

The case I have reported, has so many features in common with Dr. Knapp's case, that I feel inclined to the belief, that the tumor in question is a retention tumor. Puncture with a trocar would certainly be the most accurate manner to ascertain the nature of the tumor, but unless some positive advantage could be gained by the use of any instrument, would not be readily assented to. But my opinion is based especially upon the existence of chronic catarrh of the naso-pharynx, more prominent on the right side, and upon the occasional appearance of the "lobster eye" mentioned above. I referred the case with a history to Dr. H. W. Williams, of Boston, who entirely confirmed my view of the case.

Dr. Knapp, considering his case one of exostosis, proceeded to its removal by chisel and hammer, when it proved to be a thin, bony shell, the distended os planum, and the recesses of the ethmoid filled with a thin muco-pus. This operative proceeding is recommended by him, even to the point of disregarding the explorative puncture of the tumor, advised by other writers, as the nature of the tumor will show itself during the process of operation for its removal. But from a recent case, reported by Dr. Knapp in the Archives of Otology,¹ April num-

1. Archives of Otology. XIII, 1, p. 51.

ber this year, we may draw some valuable lessons. Dr. Knapp himself formulates them under 3 and 4 of his conclusions:

3. "Osseous tumors, which develop in comparatively healthy pneumatic cavities, can be removed with safety—that is to say, the operative traumatism does not constitute an element of particular danger."

4. "The removal of osseous tumors from pneumatic cavities with diseased osseous walls, is dangerous, by causing the inflammation to extend into the cranial cavity, and often proves fatal by acute (traumatic) meningitis and encephalitis."

In this case there was a tumor of bony hardness, the size of a cherry, on the nasal side of the left orbit, immovably connected with the os planum, which was noticed four months previously and had steadily increased to its present size. The eye was slightly displaced, but otherwise not affected. There were then, and there had been for some time polypous growths in the nasal cavity, which had often been removed. His opinion was, that the orbital tumor was either an expansion of the ethmoid cells by the polypous growth or a more or less solid osteoma springing from the walls of these cells. The tumor was removed and on the fourth day the patient died.

At the autopsy it was found, that the chronic inflammation in the pneumatic cavities of the upper part of the face had led to a distension of the left frontal sinus and rendered its osseous walls congested and porous (otitis) with beginning necrosis. The enucleation of the growth, the opening of the frontal sinus and the scraping out of its contents with sharp spoon, had produced sufficient irritation in the diseased walls of the sinus, to incite a purulent meningitis, which became the immediate cause of death.

I have failed to find in the description of this case any indication, which might lead us to assume that there existed during life the morbid condition of the osseous walls, which led to such a fatal issue. It would certainly not have escaped the attention of such an accurate observer. The question becomes pertinent: What constitutes a *comparatively* healthy pneumatic cavity, and cannot in cases of this kind some participation of the osseous walls near the growth be suspected? Since Knapp advises in his first ar-

tie the same treatment, both for exostosis and retention tumor, namely, the removal by chisel and hammer, the danger that we might meet with such an experience as he had, cannot be considered too lightly. It may be there is less danger of such complication when the osseous walls are only mechanically distended, but in this case the preliminary investigation of the nature of the tumor with trocar, instead of being unnecessary, would become imperative. In both of Knapp's cases the character of the growth was only ascertained *after* the operation. It is certainly not justifiable to operate in such cases *quand meme*.

Dr. H. W. Williams¹ says that if osseous tumors are of slow growth and not of inconvenient size, they may be left untouched.

Schweigger² says: "Osseous tumors of the walls of the orbit may appear from every part of the walls, but more especially from the upper and inner wall. Frequently these tumors are connected with disease (polypi or granulations) in the nasal cavity or the frontal sinus or extend into the cranial cavity." He recommends the Potass. Hydroid. With regard to resection, he says: "It does not give an average of favorable results, which can easily be explained from the uncertainty of diagnosis with regard to the extension of the tumors and their situation in the orbit."

R. Berlin³ says, that of the cases of resection or extirpation of osseous tumors 25 per cent die from meningitis or encephalitis, and that the deformity can in no case justify a proceeding, which gives such a high percentage of unfavorable results. He modifies this statement somewhat by saying, that if the upper wall of the orbit is not included in the growth, resection of the tumor *may* be advisable "if it become necessary to save the eye."

Although in my present case an increase in the growth, endangering the function of the eye, or the eye itself, or excessive pain might call for more determined surgical interference at some future time, I believe that I am justified in continuing the treatment, which has thus far been followed.

1. Williams, Diseases of the Eye. p. 409.

2. Schweigger, Handb. d. Spec. Augenheilk. p. 199.

3. R. Berlin: Graefe-Saemisch Handb. d. Augenheilk. VI, 2, p. 730.

MYXO-FIBROMA AT THE BASIS CRANII, CAUSING
BLINDNESS AND SEVEN YEARS LATER
DEAFNESS, BY DESTRUCTION OF
THE LABYRINTH.¹

BY J. J. B. VERMYNE, M. D., NEW BEDFORD, MASS.

The case, which I wish to report, was occasionally seen by me, but during a period of eight years was treated by a number of physicians of different types, hence its history cannot be given with entire accuracy.

Miss H. T. P., æt. 20, consulted me in January, 1876, for occasional dimness of vision, which she had observed for a few weeks, the eyes were very soon tired and vision became blurred, while she thought her vision for distance was not quite so sharp as it used to be. The eyes were emmetropic $V = \frac{1}{2}\%$. The ophthalmoscopic examination showed both discs congested and retinal vessels slightly distended. I advised rest for the eye, cold water douche and spirituous lotion to the forehead and temple. I saw her again in February. There was no observable change, but the patient declared that the eyes felt somewhat stronger. There was no other complaint at that time.

Toward the end of April of the same year she was sent to me by the physician who attended her for intense headache, especially occipital, occurring in periodical attacks. Vision had failed more rapidly. On ophthalmoscopic examination optic neuritis was easily made out, and this in connection with the intense headache led to the diagnosis of coarse disease of the brain, probably basal tumor. There was no vertigo, no vomiting no lack of co-ordination. The treatment prescribed consisted in large doses of Potass. Bromid. and Hydriod. and the application of Heurteloup's artificial leech to the temples every other day.

Under this treatment, which was continued during May, the headache became less severe, and the congestion in the disc and

1. Reported before the American Otological Society. July 15, 1884.

retinal vessels decreased. Vision improved and as she was fond of music, she began to resume practicing on the piano certain hours of the day. Of course the parents were highly elated with this result, but when I expressed my doubts about the permanency of the relief, and my fears of severe cerebral trouble, the slight improvement notwithstanding, I lost the case and the patient passed into the hands of a celebrated clairvoyant and magnetic physician of Boston.

Occasionally I would receive some information with regard to my patient from outsiders, who had seen her in the cars, when on her regular visits for treatment. These reports were at first encouraging—she was improving. Then came the report that her vision was failing again; finally that she had become entirely blind.

I did not see the patient again until January, 1881, five years after my first treatment, she was loth to speak of the treatment received during that time, but begged me to try to do something for the restoration of her vision. Her headache, at times very severe, was more paroxysmal; her mind perfectly clear, appetite and digestion good, no trouble about walking. The eyes have a staring look, pupils very large and showing no reaction at all upon strong light. Ophthalmoscopic examination shows secondary atrophy of both papillæ. I tried to persuade her that treatment would be of no avail, but she so persistently requested to have something done, that at last I consented, however, reluctantly, to try hypodermic injections of strychnine. These were applied every other day for six weeks; as might be expected, without any benefit, and treatment was entirely suspended.

Again, I saw the patient in August, 1883. She had become suddenly deaf, so that the only way of communication could be by tracing with the finger in the palm of the hand. Mind perfectly clear. No aphasia. Perhaps a little slowness in her answers. Drum-membrane of right ear opaque, of left ear normal. Tubes patent. Tuning fork faintly heard at left side; a little stronger at the right side. With my knowledge of the former history of the case I was compelled to make an ominous prognosis, believing that the neoplasma, or whatever the char-

acter of the brain disease might be, had invaded the domain of the auditory nerve.

The patient died in May of this year. From the family physician I gained the following information:

The patient's father died of apoplexy. One sister had epileptic convulsions when quite young, and died at the age of eleven, a confirmed idiot. Another sister died quite suddenly, when about six or seven years old; cause of death unknown. He had made occasional visits to the patient when suffering from a severe attack of headache. The deafness, which was the occasion of my last visit to the patient, lasted about six weeks. Then hearing gradually returned, until he thought she could hear almost as well as before. This continued for about six months, when again the hearing began to fail and at last entirely disappeared. She suffered from intense headache, but there was no vomiting. There was paralysis of the left facial. No aphasia. A few days before death partial coma set in, on the last day it was complete.

An autopsy was held 24 hours after death, according to a wish expressed by the patient during the last few weeks of her life. I am indebted to Dr. Wm. N. Swift, of this city, for the following report of the condition of the brain.

"A tumor was found situated in the anterior portion of the left inferior occipital fossa, lying beneath the Tentorium Cerebelli and being adherent on its anterior inferior surface to the dura mater, covering the petrous portion of the left temporal bone."

"The tumor was 6 cm. long, 4 cm. broad and 2 cm. thick. It was somewhat lobulated, and on its anterior inner surface were situated two small nodules, one the size of a pea, the other slightly larger. The tumor was entirely surrounded by a membrane, except at the point where it was adherent to the periosteum of the petrous portion of the temporal bone.

"The cut surface was smooth and glistening, of a grayish yellow color, with red points and streaks and bright yellow patches. There were many calcified plates, some at least one centimeter long.

The pia mater of the cerebellum was normal and there were

no adhesions between it and the surface of the tumor. The left lobe of the cerebellum was compressed by the tumor to at least one-third of its original volume. Its substance was intact, but very anæmic, and of much increased consistency. The right lobe of the cerebellum was also very anæmic and of increased consistency.

"The brain was anæmic, convolutions flattened, and there was dilatation of both lateral ventricles, each containing about 30 grammes of serous fluid.

"The microscopic examination of the tumor showed it to be a myxo-fibroma, which had undergone extensive fatty degeneration, and with deposits of lime salts. The two small nodules on the anterior surface of the tumor consisted almost entirely of fibrous tissue."

The posterior surface and top of the pyramid, corresponding with the places where the projecting nodules just mentioned were found, were largely eroded. It was removed with chisel and hammer. There is hardly a trace of the anatomical parts of the bone recognizable. A large oval opening leads directly into the tympanic cavity, closed by a perfectly intact drum membrane. No trace can be found of the auditory nerve in the surroundings of the tumor. Whether this was attributable to the difficulty of removing the brain in order not to disfigure the body or whether it was absorbed by pressure I am not able to state. The optic nerves were both shrunken.

From some afterinformation I learned that she had not been able to hear with the right ear for a number of years; cause unknown, probably chronic catarrh of the tympanic cavity. Also that during the last weeks of her life, she walked with difficulty, and had to be supported in order not to fall. Her attending physician had attributed this to her blindness.

The points of interest in this case are:

The first symptoms shown by the neoplasma were those of the eyes. At the occasion of her first visit eight years ago there was no other complaint.

The tumor probably had its origin in the dura mater, affecting the substance of the cerebellum, and the brain only by mechanical pressure. Being of slow growth it may account for

the absence of any of the symptoms, which might ensue from a more rapid encroachment on the substance of the brain and cerebellum.

The destruction of the temporal bone was due directly to malnutrition, produced by the two nodules at the anterior surface of the tumor, the microscopical appearance of which shows them with certainty to be the most recent developements in the growth.

There is a peculiar analogy in the symptoms both of the organs of vision, and of hearing, namely, a serious functional disturbance followed by a period of partial return of the function, and next by complete loss of both these senses. With regard to the power of hearing, it seems to me, that the first attack of deafness was due to pressure upon the bloodvessels, and the latter by pressure upon the nerve itself, within the meatus auditorius internus.

A CASE OF ACUTE HEMORRHAGIC GLAUCOMA SUPERVENING UPON CONGENITAL ATROPHY OF THE CHOROID.

BY DAVID WEBSTER, M. D.,

Professor of Ophthalmology in the New York Polyclinic, etc.

George T. came under observation May 17, 1876, when he was twelve years of age. His mother said that he had always been so near-sighted that his book almost touched his face while he read, and that no glasses could be found at the optician's that improved his vision. He had had convergent squint in infancy which had been corrected by Dr. H. B. Sands, who operated twice upon his right eye and once upon his left. He had never had external inflammation of the eyes, but was always subject to nystagmus, and he complained that it tired his eyes to read.

Our tests showed R. V. = $\frac{10}{20}$, eccentrically, not improved by glasses, L. V. = $\frac{20}{20}$, improved to $\frac{20}{1}$ with $-\frac{1}{4}$ s.

Upon examining his eyes with the ophthalmoscope, we found

large, brilliant plaques of choroidal atrophy scattered over both funduses, richly pigmented in the region of the macula, and more extensive in the right eye than in the left.

There was evidently nothing to be done for the eyes especially, and his mother was advised to restrain him to some extent in the use of them, and to do all she could for his general health.

There was no remarkable change in this patient's eyes until in August, 1883, more than seven years after we examined them. In the early part of that month, while spending his summer vacation in or near Rochester, he became intensely interested one hot day in the structure of a locomotive engine. Having a highly developed mechanical turn of mind, he spent the most of the day in the hot sun, investigating all the intricacies of its machinery. The same evening he was attacked with severe pain and loss of sight in his left eye, the one with which he saw best, and which he had naturally used most in his examination of the engine.

The following day he consulted Dr. C. E. Rider, of Rochester, whose experience with the case will be best expressed in his own words in a letter to Dr. Agnew and myself.

"September 26, 1883. In the case of Mr. T., the patient came to see me about August 10th, with intense hardness of left eyeball, and almost total amaurosis, and the usual symptoms of acute glaucoma. Eserine was used for a few days without relief. Paracentesis of the cornea followed without relief. Then I did an iridectomy, accompanied and followed by considerable hemorrhage. After the disappearance of the blood I found the retina separated with vision = O, and this is the condition to-day."

The patient then returned to New York, and as the vision of his right eye was insufficient to enable him to read, he entered the school for the blind, where he worked zealously from 8 A. M. to 5 P. M., daily. After he had kept this up for about two weeks he was again attacked with severe pain in and about the eye, and as this did not subside under the more or less frequent use of a solution of eserine, which Dr. Rider had prescribed for him, he came to see us again on October 25th. We found the pupil widely dilated, and the eyeball tension greatly increased. The ophthalmoscope showed only a black reflex, but by oblique illu-

mination the depths of the eye could be seen to be filled with blood, R. V. $\frac{5}{200}$, eccentrically. Leeches to the temple and morphine internally, were prescribed.

October 28th. The patient had leeches applied to the temple on the 26th, and on the 27th took morphine sulph. gr. $\frac{2}{3}$ before the pain was relieved. He also used a one-grain-to-the-ounce solution of eserine eight times a day.

January 31, 1884.—The eyeball has remained, all along, slightly injected and very hard. The eserine has failed to act upon the pupil in the slightest appreciable degree. There is total detachment of the retina, and in its center an exudation apparently the size of a pea, irregular in shape, and covered in part by extravasated blood.

February 8. R. V. $=\frac{12}{200}$. Some pain in and running back from *right eye* for the last week; also pain in left side of head, left jaws and left side of chest.

We thought that the time had now arrived when the only prudent course to pursue would be to enucleate the left eye.

Accordingly, on February 9th, aided by Dr. G. W. Hale, assistant house surgeon of the Manhattan Eye and Ear Hospital, and Dr. Frank W. King, a student of ophthalmology at the New York Polyclinic, I enucleated the bulb, and placed it in Mueller's fluid.

It is scarcely necessary to say that, with the removal of the eyeball all the unpleasant symptoms disappeared. On February 19th I found his vision $\frac{15}{200}$, and he has since worn an artificial eye"

Not less interesting than the history of the case is Dr. T. M. Prudden's report of the examination of the enucleated eyeball, which I herewith append.

DR. T. MITCHELL PRUDDEN'S EXAMINATION.

"*Cornea* normal, except at limbus, where there is considerable congestion of blood vessels and collection of small spheroidal cells about them.

Iris is dense and pressed closely against the lens. Anterior chamber is filled with fluid which becomes granular in preservative agents.

A cyclitic membrane, consisting in part of altered retina and, in part, of new formed tissue incloses the lens behind, and holds encapsulated a considerable quantity of blood in masses.

Retina completely detached. The space between the detached retina and the choroid is filled with a semi-fluid material containing much free blood, pigment, and fragments of variously shaped cells.

The *ciliary body* is flattened.

The *choroid* is, in general, flattened against the sclera with compression of all its layers. Many of the larger blood vessels are surrounded by dense masses of pus cells. In the vicinity of the macula lutea the entire choroid is thickened, projecting irregularly inwards, and pigmented cells are irregularly clustered about the thickened area. At some distance from the macula lutea, though chiefly in this part of the eye, there is irregular thickening and thinning of the choroid, and irregular distribution of the pigmented cells.

The *optic papilla* is not depressed.

Anatomical Diagnosis:—Irido-cyclitis, disseminated choroiditis with choroidal atrophy, detachment of the retina."

It is remarkable that although a high degree of intraocular pressure was kept up in this case for a period of about seven months, yet no cupping of the optic papilla was produced. The effects of the pressure seems to have been only shown in the "flattening" of the ciliary body and of the choroid, and close contact of the iris with peripheral portion of the anterior surface of the crystalline lens.

The "thinning" of the choroid was probably in the spots that were seen to be atrophic years before the eye was attacked with glaucoma; the "thickening" was probably in spots, attacked with choroiditis during the glaucomatous period. It is interesting to see how the microscopic description of the region of the macula lutea tallies with the ophthalmoscopic description.

The detachment of the retina was probably due to hemorrhage from the choroidal vessels in consequence of the sudden lessening of intraocular tension by the iridectomy, and the necessarily diminished support to the walls of the blood vessels thus produced. Hence the "free blood, etc.," in the space between the detached retina and the choroid.

TWO CASES OF SYMPATHETIC DISTURBANCE FROM FOREIGN BODY IN THE EYE.

BY CHARLES J. LUNDY, A. M., M. D.,

Prof. of Diseases of the Eye, Ear and Throat in the Michigan College.
of Medicine, Detroit, and Surgeon in Charge of the Michigan Free
Eye and Ear Infirmary.

It is a well established fact that the presence of a foreign body in the eye is a great source of danger to the fellow eye, on account of the sympathetic trouble which, sooner or later, is almost sure to arise. Examples of sympathetic affections of the eye due to such cause are almost too numerous to attract any marked attention. However, the two cases, whose histories I am about to give, differ so widely from those ordinarily observed that I venture to relate them.

CASE I. Henry B., æt. 18, a machinist's apprentice, was struck in the eye by a small piece of steel while using a "punch." The piece of metal penetrated the cornea and crystalline lens. The patient was brought to my clinic, but I did not see him till the next day. On examination a small lacerated wound was observed near the centre of the cornea and the lens was so "cloudy" that no view of the fundus could be obtained. The patient and his friends insisted that they had found the fragment of steel which caused the wound, and that there could not possibly be any of the metal within the eye. Although informed that it was uncertain whether or not the steel was in the eye, and of the danger which would arise if it were there, the patient was in no wise discouraged, but determined to accept the risk. Atropia was frequently instilled, and cold was applied; the patient was put at rest and in the dark. In the course of six days the lens had become tolerably well disorganized, and some of the broken down lens matter found its way into the anterior chamber. There was much ciliary congestion and more or less pain, but no iritis or eyelitis. Seeing that the presence of the disorganized swollen lens was producing much irritation, I removed it by an upward corneal section. After the operation the pain and congestion gradually subsided and the

eye no longer gave discomfort. I had almost arrived at the conclusion that my fears regarding the presence of a foreign body in the eye were not well founded, when 26 days after the removal of the traumatic cataract, I was hurriedly called to see the patient. I was informed that for two days the eye had been irritable and congested, and that during the past night the pain had been so severe as to prevent all sleep. I found marked ciliary congestion, photophobia and lachrymation, with great tenderness on pressure over the whole eye-ball. There was also great intolerance of light in the fellow eye, with some ciliary congestion and lachrymation—in short there was well marked evidence of sympathetic irritation in the fellow eye. The patient was informed that in all probability the outbreak of inflammation was due to the presence of the piece of metal which produced the injury over a month before, and that enucleation of the eye was demanded by the exigency of the case. He would "consent on the morrow if not relieved." The artificial leech was employed, atropia was frequently instilled and hot fomentations were applied. Cold was first tried but, as it increased the pain, hot fomentations were substituted. On the next day matters were worse, if possible, and the patient consented to the operation and the ball was enucleated. Search was made for the offending piece of metal and it was found embedded in the choroid and sclerotic, at the posterior pole of the eye, a short distance from and to the nasal side of the optic disc. Its location was about the point where the short ciliary nerves pierce the sclerotic on entering the globe. It was irregularly oblong, being about $2\frac{1}{2}$ mms. long by less than one mm. broad.

In the great majority of cases sympathetic disturbances follow as the result of some injury done to the ciliary region—"the danger point," as it has been aptly called. In this case no injury whatever was done to the ciliary body, and even the iris had escaped unharmed. But the location of the foreign body in the region where the ciliary nerves enter the globe before passing forward to the ciliary body, and the violent character of the outbreak, with the marked functional disturbances in the fellow eye, make it fair to presume that the piece of metal lay in contact with a nerve twig. I regret that in my haste to dem-

onstrate the presenee of the foreign body to the parents of the patient, I lifted it from its bed before its relations could be determined.

CASE II. Henry T., æt. 29, farmer, Stony Point, Ont. Nine years ago he was struck in the eye by a small chip from an iron hoop, which he was driving upon a barrel. The piece of metal penetrated the cornea and iris, and also wounded the crystalline lens and ciliary body. Within a few days after the injury the eye became greatly inflamed and very painful. The inflammation lasted several weeks, and subsided without injury to the fellow eye. To the best of patient's recollection all pain and redness had disappeared within six weeks after the receipt of the injury. Sight was almost wholly destroyed, and he had little more than perception of light, but beyond this the eye gave him no trouble. For nine years this eye remained free from irritation, pain or discomfort, and during all these years a piece of metal lay imbedded in the ciliary body. When the patient consulted me the following conditions were observed: Great ciliary congestion, photophobia and lachrymation, with great tenderness on pressure, especially over the ciliary region. The globe was quite hard, T + 2, and the anterior chamber extremely shallow. As the result of iritis which followed the injury there was complete posterior synechia and occlusion of the pupil. In the fellow eye there was some ciliary congestion, photophobia, photopsia, lachrymation and accommodative asthenopia. The patient was unable to account for the sudden and rather severe outbreak of inflammation in the blind eye. He had not received a blow upon the eye, had not fallen, or received any severe concussion. Neither had he been exposed to wet or cold.

He was informed of the danger to the good eye from the presence of the fellow, and of the probability that there was in the eye the piece of iron which made the wound nine years before. He would not consent to the removal of the eye (which by the way was a good looking eye when not inflamed), but desired me to treat him and subdue the inflammation if possible. At the end of a week there was a slight improvement in his condition, but it was of short duration. The symptoms assumed a more aggravated type, his suffering became intense, and the sympa-

thetie trouble became alarming. On first examination there was slight retinal congestion in the good eye, but it had now become quite marked, and vision was considerably impaired. I now felt it a duty to myself to relinquish the case, unless the patient consented to the removal of the offending organ. He finally consented and the blind, painful eye was enucleated. The sympathetic disturbance soon subsided, and when he visited me, four weeks later, to have an artificial eye fitted, sight was normal. After hardening the enucleated globe, it was opened, and search revealed a small piece of metal lying upon, and partially imbedded in the ciliary body in the upper and inner quadrant. It was surrounded, except at one small point, by a tolerably thick layer of organized inflammatory exudate, which had encapsuled the metal. It was about two mms. long by one and a half mms. broad, and was extremely thin—a mere scale—and crumbled to pieces when grasped by the forceps on being exhibited with the eye at the Wayne County (Mich.) Med. Society. Aside from the evidences of plastic irido-elyetitis, there was one point of interest. It was the deep excavation (cupping) of the optic nerve, similar to that so frequently seen by the ophthalmoscope in advanced stages of glaucoma.

The first of these two cases illustrates the fact that the mischief may ensue from relying too implicitly upon the statements of a patient. When patients fear the loss of an eye, they often try to mislead the surgeon by their positive statements, and I have seen mischief follow in similar cases. It illustrates another point, and that is, that the presence of a foreign substance, especially metallic, elsewhere than in the ciliary body may produce quite as serious results as if located in the ciliary region itself.

It seems to be a pretty well-established fact that sooner or later, a foreign body in the eye, especially if it be a metallic body, will prove a source of serious inflammation and endanger the fellow eye. Case II illustrates this point. Here we have a period of quiescence extending over nine years, when suddenly, and without other known cause, a severe inflammation arises which at once threatens the patient with total blindness. This case also illustrates the conservative efforts of nature, for we

find the jagged piece of iron surrounded by a sort of capsule which protected for a long time those parts so sensitive to irritation. Why, it may be asked, should not the fragment of iron remain in that position indefinitely, having been there nine years without producing further disturbance? It is only a few years since the late Professor Gross removed a bullet from the leg of an old soldier, who was wounded while serving under Napoleon the First. This bullet had been imbedded in the soldier's leg for two-thirds of a century, and had given little or no inconvenience. At last, however, it began to trouble him, and he sought and obtained relief. These metallic substances may become encapsuled by inflammatory products which are thrown out around them and which become organized. Sooner or later the metal is apt to shift its position, as the result of a blow, a jar or concussion, and to break through its capsule and thus it may become a fresh source of irritation and inflammation. Upon this theory, if it be correct, we would be able to explain the occurrence of the severe inflammation and consequent sympathetic disturbance in case II, nine years after the receipt of the injury.

A CASE OF PERNICIOUS ANÆMIA.

BY A. M. BIERWIRTH, M. D., ST. LOUIS.

OPHTHALMOSCOPICAL EXAMINATION, BY A. ALT, M. D.

Mrs. B., aged 23, was in good health up to her 19th year. She then became afflicted with ulcerated sore mouth for one whole year; this then would improve for several months, only to return again. Such relapses have occurred up to the present time. She always menstruated regularly and complained only of a slight pain between the shoulders, frequent headache and palpitations in summer-time. She began to lose flesh ever since she first had the ulcerative stomatitis. She never had to do hard work, and always had good food. She however had a dislike for meat. In November 1883, she was delivered of a healthy boy. Soon after this the ulcerations of the mucous

membrane of the cheeks, the edge of the tongue and of the pharynx returned, accompanied by excessive ptyalism. This condition so distressed her that she was unable to take sufficient nourishment. After vain efforts during more than two months, to rid her of the ulcers, large doses of Iodide of Potassium at last caused them to disappear.

When last seen about four weeks after birth of child she presented the same symptoms as she does to day, after three months treatment.

She is a perfect picture of the utmost prostration caused by excessive anæmia. Her skin presents a waxy more than a pale appearance; her lips are almost as white as her skin; the body is generally emaciated in the highest degree. When her eyes are closed she presents the appearance of a corpse. She has no pain except in the neighborhood of the womb, which, however, is but slight (no organic trouble).

The only symptoms of disease, are the following: An occasional irregular attack of fever, a slight cough, with muco-purulent sputa, and above all a pulse of a 120 or more, fever or no fever. This is accompanied by anæmic noises all over the region of the heart and pulsation of the jugular veins.

There is a very slight dullness at the apex of the left lung, but her respiration is always of normal frequency.

She has a very poor and fickle appetite and her bowels are irregular. Occasionally she will vomit.

Liver, kidney, and spleen are apparently in a normal condition.

The absence of all organic lesions, together with the symptoms of excessive anæmia led to the examination of the blood and of the eyes, and the result of this was that the case must be considered one of so-called *progressive pernicious anæmia*.

The blood drawn from the end of a finger, was very pale and watery, and presented peculiarities not found in normal blood. The red corpuscles were larger and paler than normal, and globular in shape as if they were swelled, thus lacking the central depression peculiar to the red blood-corpuscle. Those appearing on edge presented the shape of a shell, instead of the normal biscuit shape. They, furthermore, did not arrange themselves in the way

of a roll of coin. A great many appeared granulated. Besides the formed elements, there were pieces in the liquid of undefinable character, which were the debris of destroyed red corpuscles. The white blood corpuscles were apparently not increased in number.

Ophthalmoscopic Examination June 18. Both pupils very widely dilated and but very slightly reacting upon strong light.

R. E. Optic papilla very pale, arteries scarcely visible. Veins broad and somewhat tortuous, appearing bright red, like arteries. Retina surrounding the optic papilla slightly whitish infiltrated. Numerous striped hemorrhages in the retina.

L. E. Optic papilla, adjacent retina and blood-vessels are in the same condition as in the R. E. The hemorrhages no longer are visible, but numerous white (fatty) patches in the retina are evidently their remains.

Sight was considerably reduced. An exact examination of the amount of diminution could not be made.

Examination Aug. 10. The patient is considerably improved under the free use of tonics. Pupils smaller, react slowly. Fundus in both eyes free from hemorrhages, no white patches, blood-vessels very small, especially arteries. Discs pinkish. Can read newspaper print.

REPORT OF THE TWENTIETH ANNUAL MEETING
OF THE AMERICAN OPHTHALMOLOGICAL
SOCIETY, AT THE GRAND HOTEL,
CATSKILL MOUNTAINS.

BY ADOLF ALT, M. D.

The meeting of the American Ophthalmological Society took place on the 16th and 17th of July.

DR. W. F. NORRIS, of Philadelphia, Vice-President, in the absence of the President, Dr. H. D. Noyes, of New York, called the meeting to order.

DR. R. H. DERBY, of New York, read a paper by Dr. H. Der-

by, of Boston, on *Iridectomy in Chronic Iritis*, taking as a sample a case of chronic recurrent iritis in which iridectomy had been performed on account of threatening glaucoma.

DR. DERBY thought iridectomy useless in these cases, and stated that the course of the disease, which ultimately disappears after years, was in no way altered by the operation.

DR. KNAPP, of New York, called the attention of the society to the fact that a discussion on the same subject at one of the congresses of ophthalmologists at Heidelberg had shown that most of those present there were against the operation, in chronic recurring iritis. He himself would perform iridectomy only when there was any danger of cyclitis or glaucoma supervening.

DR. O. F. WADSWORTH, of Boston, then read a paper by Dr. Ch. S. Bull, of New York, *on cases of restoration of the eyelid by Wolf's method*. The paper referred to three cases, two of ectropium, on account of burns, and one caused by caries of the inferior orbital margin. In the first two cases the flaps were taken from the arm, in the third from the chest. He used sutures and a dressing of iodoform and borated cotton; carbolic acid was used as soon as suppuration took place at the sutures. In all of the three cases the result was a satisfactory one.

The next paper was read by Dr. B. E. Fryer, of Kansas City, on a *Successful Case of Skin Flap Transplantation without Pedicle, to cover the Eyelid, after the Removal of an Epithelioma*. In this successful case the dressing consisted simply of two layers of gold beater skin plaster. This plaster, when dry, held the parts firmly together as, "in a splint." Perfect union had taken place on the seventh day.

DR. R. H. DERBY, of New York, then reported a case of *Gangrene of the Lid with subsequent Restoration of Tissue without Plastic Operation* and exhibited the photographs of this case.

In the discussion on these papers, Dr. T. R. Pooley, of New York, stated that he had seen perfect restoration of a lid after total sloughing of a transplanted flap and that he thought the simple excision of the diseased parts about as good a procedure as transplantation.

DR. PROUT, of Brooklyn, reported a successful case of transplantation, and laid peculiar stress on rest and the application of rubber tissue and of a lotion containing boracic acid and opium.

DR. G. C. HARLAN, of Philadelphia, used dry heat, continually applied, in the form of hot absorbent cotton, with perfect success.

DR. D. W. S. LITTLE, of Philadelphia, contended that there was no cure for cicatricial ectropium without transplanting.

DR. L. HOWE, of Buffalo, thought that to insure perfect rest, by stitching the lids together, was of more importance for a good result after transplantation, than any special kind of dressing.

DR. J. A. ANDREWS, of New York, thought the dressing was of great importance, and said he would not be said with gold-beater skin plaster only.

DR. J. A. LIPPINCOTT, of Pittsburg, in a successful case stitched the lids together, but did not fill the gap by a flap.

DR. J. GREEN, of St. Louis, was rather in favor of the gold-beater skin plaster as a dressing, and thought that the sutures gave rise to suppuration.

DR. WADSWORTH stated that in his case he had passed the sutures through the cutis only and no suppuration had occurred.

DR. G. C. HARLAN, of Philadelphia, then read a paper on a case of *monocular hysterical Blindness with Mydriasis and Blepharospasmus*. These symptoms, as well as some concerning other organs, were cured by the application of a large magnet, even when a sham—magnet, made of wood, was used.

The next paper was read by Dr. H. Knapp, of New York on *Neuro-Retinitis with Fulminant Blindness*. The paper referred to two cases. The first case was that of a man, apparently perfectly healthy, who became rapidly blind under the ophthalmoscopic picture of neuro-retinitis. The only other symptom of disease was that the patient had not urinated in twelve hours, when only $3\frac{1}{2}$ could be withdrawn from his bladder with a catheter. In spite of all treatment (dry cups, salicylate of soda, iodide of potass. and calomel, strychnia and electricity) atrophy of both optic nerves followed, and the patient regained vision

only in one eye, and in a very minute islet of retinal tissue near the macula lutea, which allowed him to perceive objects at a distance of about two feet and in an area of about one square inch.

The second case concerned a girl who became rapidly blind, first in one, then in both eyes, with the ophthalmoscopic picture of neuro-retinitis, after having noticed momentary observations of sight for some time. No other abnormal conditions were found. Salicylate of soda and calomel were given in large doses, until an excessive diarrhœa ensued. After three days sight began to return gradually, and ultimately became perfect. The optic papillæ had an atrophic appearance.

DR. KNAPP thought that by the active diaphoresis and purging this happy result was obtained, and that it was directly due to the absorption of something which had pressed upon the optic nerves.

DR. KIPP, of Newark, stated that he had always been accustomed to regard cases of optic neuritis without general symptoms as the result of some brain lesion. He had, however, of late seen cases in which he thought this could not have been the case. He cites especially one case in which a patient had in a fit fallen down some steps and in which monocular optic neuritis developed.

DR. KNAPP thought that the optic neuritis in this case was due to a fracture. He further stated that disease of the frontal lobes of the brain might exist for a long time without causing any marked symptoms besides optic neuritis.

With regard to this point, that even in cases of serious brain affections, the eye symptoms may be the first to be noticed and may for some time not be followed by more important nervous symptoms; DR. ALT related a case in which optic neuritis preceded the distinct symptoms of chronic cerebro-spinal meningitis by several months.

DR. W. T. NORRIS, of Philadelphia, then read a paper on *Hereditary Atrophy of the Optic Nerves*. He gave the history of the families of seven children. Out of twenty-two members of this family fourteen became blind from atrophy of the optic nerve, nine males and five females. The atrophy usually made its appearance after the 16th year of life. In one case he has

been able to watch the beginning and progress of the affection. The first stage was a slight neuritis optica with a central scotoma for colors. This was followed by a general aggravation of the symptoms and marked œdema of the papilla and retina. The third stage then was atrophy. No treatment seemed to be of any value. Only one of these patients got better under bichlorate of mercury and strychnia, his vision being raised from $\frac{6}{1X}$ to $\frac{6}{XXIV}$.

DR. HOWE, of Buffalo, called attention to some cases of hereditary glaucoma and Dr. Kipp to some cases of hereditary atrophy of the optic nerves which were later on improved, the only remaining pathological condition being color-blindness.

DR. NORRIS further read a paper on *Two Cases of Orbital Tumor*.

One was a case of myxosarcoma of the orbit in a child four months old. Repeated evisceration of the orbit failed to succeed in preventing relapse.

The second case was one of osteoma in a woman thirty-two years old. It started from the floor of the orbit. In removing it with chisel and hammer the eye had to be sacrificed. It reached back to the optic foramen. Some parts were elastic and evidently cartilaginous. No return after five months.

DR. J. A. ANDREWS, of New York, read a paper on *Jequirity*. He severely criticised von Wecker's manner of introducing this remedy, and thinks the bad results, he and others have had, due to the use of strong infusions. He proposes to use a one per cent infusion and only once in 24 hours. He contends that the croupous exudation is not only not necessary, but should rather be avoided, an opinion which none of those present shared with him.

In the discussion, Dr. Seeley, of Cincinnati, stated that he never paid any strict attention to the per cent of the infusion; he makes a practically saturated infusion. Saw good effects from jequirity in a case of scleritis. He would in cases of dense opacity of the cornea recommend to prick the cornea with the tattooing needle and apply to the jequirity 24 hours after.

DR. H. S. SCHELL, of Philadelphia, keeps jequirity from spoiling by adding one per cent of boracic acid, Dr. O. F. Wads-

worth, of Boston, by adding $1\frac{1}{2}$ to 2 per cent of carbolic acid.

DR. J. S. PROUT, of Brooklyn, calls the attention to some cases reported by him in which he had very good results from the use of quinine in just such cases as are now considered to be best treated with quinine.

In the afternoon session, Dr. A. Alt exhibited the macroscopical and microscopical specimens of the *Case of Experimental Sympathetic Ophthalmia* reported in the last number of this journal.

The discussion on this question proved that the larger part of those present considered the transmission of the inflammation by the optic nerve and its sheaths the most probable way.

DR. H. G. MILLER then exhibited drawings and explained a new *Perimeter* constructed by Dr. E. Dyer.

The evening session was opened by a paper read by Dr. H. S. Schell, of Philadelphia, on *A Case of Embolism of the Central Retinal Artery*. The embolism had occurred in a woman 72 years old. There was an organic lesion of the heart. There was swelling of the optic papillæ and œdema of the retina. The cherry-red spot in the macula was wanting. The rosary arrangement of the blood-vessels and broken columns of blood in motion could well be seen. Pressure emptied the veins. The question was, whether was a case of embolism or of thrombosis.

Then followed a paper by Dr. A. Mathewson, of Brooklyn, on *A Case Illustrating the Natural History of Cataract*. Senile cataract had developed in a man, after he had suffered a number of times from iritis. The cataract one day became dislodged spontaneously into the vitreous chamber. This caused new attacks of iritis to appear, and finally glaucoma set in. When he was seen in that condition, a small body lay in the anterior chamber which appeared like a piece of the cataractous lens. Eserin. sulph. gave perfect relief at first, then it failed, and opium relieved pain and glaucoma. When this after a few days proved unsuccessful too, the eye had to be enucleated.

DR. JOHN GREEN, of St. Louis, reported three similar cases, in one of which the lens has been dislodged for eight years.

DR. W. W. Seeley, of Cincinnati, read a paper on *Experiences in Refractive Cases*, in which he recommended not to overlook

the state of the ocular muscles when prescribing glasses in cases of ametropia. He thought mixed astigmatism was very rare and usually disappeared after instillations of atropia. He advocates to give prisms in the cases of myopia with insufficiency of the internal recti.

DR. MITTENDORF, of New York, did not think mixed astigmatism so rare a condition. He is in the habit of prescribing prisms in myopia, with their basis not only outward but sometimes down—or upward. Has found boxing lessons an excellent adjuvant in cases of muscular asthenopia.

The secretary then read a paper by Dr. L. Webster Fox, of Philadelphia, on *The Clinical History of a Case of Sympathetic Ophthalmia*. The case was of interest on account of the rapidity (six months) with which an injured eye not only became useless itself but destroyed its partner. Two illustrations were shown.

DR. J. A. LIPPINCOTT, of Pittsburgh, read a paper on *Two Cases of Orbital Abscess*. In the first case the abscess made its appearance in the right orbit of a child right after the recovery from an attack of facial erysipelas. Two incisions were made, the last one of which struck the pus-cavity. Healing perfect in five weeks. Two days after the opening of this abscess it became necessary to open one in the left orbit. The second case concerned a baby, not quite twelve months old. The pus from this abscess was twice aspirated. There is now a spontaneous opening which discharges pus from time to time. The optic nerve is atrophied.

DR. THEOBALD, of Baltimore, related a similar case of abscess of the orbit, in which recovery took place after an incision through the upper lid.

The next paper was by Dr. Ch. J. Kipp, of Newark, on *Abscess of the Frontal Sinus*, reporting two cases. In the first the patient had long been suffering from frontal headache. There was a swelling on the left inner, upper orbital margin, which pushed the eyeball downwards and outwards, and caused diplopia. Dr. Kipp felt a hard, irregular tumor and made the diagnosis of sarcoma of the orbit. When operated upon it proved to be a pus-cavity enclosed within a thin bony shell.

Patient died of pneumonia. The frontal sinus, the ethmoidal cells and the sphenoid sinus were found to have been converted into one large pus-cavity. The roof of the frontal sinus was discolored.

The second case was that of a woman who complained of pain in the left frontal region. A tumor was found situated at the inner, upper angle of the left orbit extending back into the orbital cavity. It was somewhat nodular and hard. It had pushed the eye downwards and outwards. The diagnosis being distention of the frontal sinus, an operation was advised, but declined. When ulceration of the cornea took place from the exposure, Dr. Kipp had again an occasion to examine the tumor. It now gave way under his fingers and a large quantity of fetid matter was emptied through the nose. The cavity was refilled, however, and again emptied by external pressure. This procedure is now gone through with as soon as the cavity becomes distended. The discharge is no longer fetid. When patient blows the nose, the air enters the frontal sinus.

DR. L. HOWE, of Buffalo, read a paper on *The Changes in the Eye Immediately after Death*. He has had occasion to examine the eyes of a man dying from pulmonary phthisis during and after death with the ophthalmoscope. The interesting point (which can be seen in any dying animal's eye.—EDITOR.) was the gradual loss of color of the fundus, until only a white reflex could be obtained through the now wrinkled cornea. Dr. Howe stated that, perhaps, this wrinkling of the cornea might in the case of executed criminals have been mistaken for rupture of the lens-capsule, as he had not found such a rupture in a case which he had occasion to examine.

DR. MITTENDORF stated that Dr. Derby, of New York, had found a rupture of the lens-capsule and dislocation of the lens in five cases out of six.

The session on the second day was opened by a paper read by Dr. W. S. Little, of Philadelphia, on *A Case of Double Glioma of the Retina, Probably Congenital*. The point of interest in this case was, that although both eyes were effected, (enuclation was refused), the malignant growth spread in a very different manner from the two original seats, invading glands and bones

on one side only. Death ensued from suffocation. Several photographs were exhibited.

DR. THEOBALD reported the case of a patient who four years after the enucleation of a gliomatous eye was perfectly well.

DR. MITTENDORF thought these patients all died in spite of the enucleation.

DR. MATHEWSON thinks, the cases which do not die are not glioma.

DR. KNAPP, protesting against this idea, states that he has watched a case for 14 years after enucleation of one eye on account of true glioma of the retina, when the patient was four years old.

A number of gentlemen have had similar cases, and Dr. Howe referred to one in which Dr. Agnew, of New York, had enucleated both eyes and the patient is living.

DR. LITTLE further read *A Report of the Progress of the Examination of the Employees of the Pennsylvania Railroad as to their Color-sense and their Acuteness of Vision and of Hearing*, by Dr. W. Thompson, of Philadelphia, according to whose method these examinations have been made. That the method worked very satisfactorily was successfully proved by a number of letters from the officers of the railroad company. The examination of 40,000 men had led to the detection of color-blindness in four, of defective acuity of vision in ten per cent.

DR. G. C. HARLAN, of Philadelphia, read the next paper on *Two Cases of Swelling of the Optic Discs, Possibly Congenital*. One case referred to a young man, the other to a girl fifteen years of age. While in the former case (myopia) there were no other symptoms, in the other there were diplopia, headache and occasional dizziness; but these cerebral symptoms disappeared after the correction of the ametropia. Sight perfect.

Similar cases were reported by Drs. Risley and Mittendorf, Dr. Kipp stated that quite a large number of such cases have been put on record by different observers.

DR. G. HAY, of Boston, then reported *Two Cases of Conical Cornea in which Sight was very Considerably Improved by Dr. Raehlmann's hyperbolic lenses*.

DR. O. F. WADSWORTH, of Boston, read the report of *A Case*

of *Myxædema with Atrophy of the Optic Nerve*. A woman, 42 years old, had œdema of face, hands and feet, for six years which grew continually worse. Her hands and feet are now considerably enlarged. There is some œdema of the legs. The eyelids and the tongue are enlarged. No pitting from pressure on the œdematous parts. Her skin is not dry, yet she does not perspire. Her appetite and her mental condition (except her memory) are good. Urine normal. There is atrophy of both optic nerves. The visual field is irregularly contracted. Perhaps, the atrophy is not due to the myxædema, but only accidentally found in the same individual.

DR. LITTLE, who had occasion to see a number of cases of myxœdema has never found any eye-symptoms combined with it.

DR. T. R. POOLEY, of New York, read a paper on *Acute One-sided Dakryo-Adenitis*. As in the case reported the dakryo-adenitis followed the sloughing of the cornea of the fellow-eye from blenorrhœic conjunctivitis, DR. POOLEY considers the inflammation of the lachrymal gland due to mild septic infection. No suppuration occurred.

DR. KNAPP does not consider such cases to be rare, they are only not spoken of. The majority do not suppurate. He refers to an epidemic of acute darkyo-adenitis as reported by Galezowski. The prognosis is always good.

DR. POOLEY mentions a case of Dr. Loring's, in which hypertrophy of the gland followed and necessitated its removal.

DR. MILLER reported a case of bilateral acute dakryo-adenitis, which at first was mistaken for gonorrhœal ophthalmia.

DR. W. T. MITTENDORF, of New York, then read a paper on *Polycoria*. In the eye of a young girl the doctor found five pupils, a central one and four peripheric ones. Her father had three pupils. Drawings were shown.

DR. E. HUTCHINSON, of Utica, reported a case of *Plastic Operation after a burn of the Lids*. Photographs illustrated the case.

DR. J. AUB, of Cincinnati, then read a paper on the *Removal of Foreign Bodies from the Vitreous Body*. In the cases which the doctor reported Bradford's magnet was used.

In the first of his cases the piece of iron entered the eye at the outer corneo-scleral margin without injuring the lens. Severe inflammation, which did not yield to treatment, proved the presence of the foreign substance within the eye. On the fifth day the original wound was enlarged upwards and downwards so as to admit the magnet. The piece of iron withdrawn weighed gr. $\frac{3}{4}$. No reaction, rapid improvement. Twelve days later another piece of iron was seen lying in the vitreous body which was then also removed by an incision and with the aid of the magnet. The magnet was entered between the equator of the lens and the ciliary body and the piece of iron weighing gr. 1 was withdrawn. Sight improved from $\frac{6}{c c}$ to $\frac{20}{x x x}$ within two months. The condition was the same when seen ten months later.

In the second case a piece of steel had entered the vitreous chamber. Two months after the injury had been received, the conjunctiva and Tenon's capsule were dissected off, and an incision was made through the sclerotic. The magnet caught hold of the foreign body in the ciliary region. It weighed gr. $\frac{3}{4}$. The wound was closed by sutures. Four days after this operation $S = \frac{20}{c c}$ and later on increased to $\frac{20}{x x}$ (with glasses). The condition has remained unchanged for two years.

The third case came under observation directly after the accident had occurred. Wound at the inner part of corneo-scleral margin with prolapse of the iris. Blood in the vitreous chamber. Eserine. The prolapse became enlarged, and an iridectomy was performed. $S = \frac{20}{x x x}$. By the use of the ophthalmoscope a piece of steel could be seen lying upon the choroid. Two months later the patient complained of pain and inflammation. The foreign body was now found to be dislodged upon the ciliary body. An incision was made through the conjunctiva. Tenon's capsule and sclerotic in the shape of an \cap . The magnet was introduced and the foreign body withdrawn successfully. Wound closed by sutures. No reaction. Nine days later $S = \frac{20}{x x x}$, which was finally raised to $\frac{20}{L}$.

The fourth case was seen forty hours after a piece of steel had entered the eyeball through the cornea and lens. No details of the fundus could be seen. Patient insisted upon it that no foreign body could be within the eyeball. The corneal wound did not

close for twelve days, which in Dr. Aub's experience, is a sure sign of the presence of a foreign body within the eyeball. The lens was gradually absorbed within the following six weeks. After this pain, cyclitis, and sympathetic irritation of the fellow eye made their appearance. An attempt was now made to remove the foreign body by aid of the magnet, but failed, although the magnet caused the sclerotic to be drawn inward every time it was brought near the site of the foreign body. The eye was then enucleated and the foreign body found to be encapsulated, thus showing that at an earlier date it might have been removed, had patient given his consent to the operation,

DR. KNAPP related a case in which he succeeded in removing a foreign body from the vitreous body, although it could not be seen before the operation, and a further case in which the foreign body, after having pierced the eyeball was found encapsulated on the outer surface of the sclerotic. He further stated that such injured eyes should always be removed, since they almost always lead to sympathetic inflammation, even after the successful removal of the foreign body.

The last paper was read by Dr. S. D. Risley, of Philadelphia, on *A case of Hypermetropic Astigmatism passing over into Myopia*. He stated that he had observed a number of such cases of gradual distention of the eyeball.

The officers elected for next year are:

President—Dr. W. T. Norris, of Philadelphia.

Vice-President—Dr. H. Derby, of Boston.

Secretary and Treasurer—Dr. O. F. Wadsworth, of Boston.

Corresponding Secretary—Dr. J. S. Prout, of Brooklyn.

The place of meeting will be determined upon by the Secretary.

The by-laws of the society were amended by a unanimous vote in favor of the following resolution:

As member of the society can be admitted only such physicians as have been engaged in the practice of ophthalmology for five years, have shown evidence of scientific attainments, and have conducted themselves in conformity with the ethical rules of the society.

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TWO CASES OF SYMPATHETIC DISEASE OF THE EYE.

BY H. CULBERTSON, M. D., ZANESVILLE, OHIO.

Assistant Surgeon U. S. Army, Retired.

CASE I.—SYMPATHETIC OPHTHALMIA.

John M., æt. 45 years, applied for treatment June 20, 1884. In the year 1869 I enucleated his left eye by Bonnet's method and secured a healthy coniform orbital cavity. I obtained for him several artificial eyes, which he wore comfortably year after year and with no more than the usual discharge attending the use of such eyes. His business is that of a carriage blacksmith, which he followed continuously without any injurious effect upon his right eye. About May 20, 1884, he broke his artificial eye and procured another, which did not fit him, from a party who did not understand how to adapt such eyes. This eye was too broad at the base vertically, and as a result the lower segment of the eye pressed firmly down into the inferior cul-de-sac, causing the margin of the lower eyelid to turn inwards. The eye did not fairly enter the orbital cavity below, and as a result, there was produced an elevated ridge running across the lower region of the base of the orbit, which supported the base of the artificial eye below, and against which that part of the eye pressed firmly.

This ridge was red and tender to pressure, while the balance of the coniform orbital cavity was pale and free from tenderness. There was no tenderness on firm pressure at the apex of the cone in the region of the divided optic nerve. This ridge was composed of mucous membrane and infiltrated cellular tissue. The eye inserted, on attempting to close his eyelids, pain would result in the region of this ridge. From the time he began wearing this eye, the discharge from the left orbital cavity became profuse, flowing over the eyelids and requiring frequent wiping. He feels confident that at no time did any matter from this cavity gain access into the other eye. At the date he came to me this discharge was muco-purulent, and he was wearing the artificial eye. About the eighth or tenth of June, 1884, he began to feel an uneasiness and occasional pains in his right eye, especially on reading at night. He continued his work. On the fifteenth of the same month he took a long ride in the country in an open buggy. On the sixteenth he resumed his work and found his eye more sensitive. On the seventeenth he could not work the pain in the eye being extremely severe, and it was intolerant of light. During this day there was a muco-purulent discharge from the right conjunctiva—so he says. He applied iced compresses to the eye and a collyrium of atropine. Anodynes were taken also. Under this treatment the pain was mitigated but not removed. When he came to me on the twentieth the photophobia was less because of effusion, the pain was partially relieved, the iris was adherent to anterior capsule and pupil irregular; there was no discharge from the conjunctiva of the right eye, the injection of the conjunctiva was almost entirely radiated; the aqueous was moderately clear and iris slightly darkened and the anterior chamber ample. There was pigment on the anterior capsule of the lens on its inner and lower quadrant and on its lower segment, and the iritic adhesions were found in the same sections. There was tenderness on pressure in the lower ciliary and at the upper and outer ciliary region. In the lower part of the pupillary area appeared a plasmic effusion, which spread from below upward in the pupil until it reached the upper border of the pupil, in the progress of the case, when vision was merely perception of light. He could only count fingers when he came

to me. As the disease abated this effusion in the pupillary area was absorbed in the reverse order in which it appeared, viz., from above downward, and his vision returned first below and then above. After he came to me he did not suffer severe pain in the right eye. In the left orbital cavity there was a muco-purulent discharge, but no pain when the artificial eye was removed, which was done at once, excepting on pressure over the ridge above described. This ridge continued red and inflamed until the close of the treatment of the case. It was indurated but no matter formed within it. The inner surface of the left lower eyelid was also tender on pressure, and during the progress of the case a linear ulcer appeared along the entire length of the lid. During the course of the treatment the left orbital cavity was disinfected. Atropine was the only eye water used in the right eye. He was mercurialized, the right temple was cupped; he was blistered behind the right ear; he was given jaborandi at night and anodynes for pain and sleeplessness; he had also iodide of potassium and later tonics and strychnine as a nerve tonic. It should be stated that this man was temperate and that he had not had rheumatism or syphilis.

September 2, 1884, his vision = $D_{12.0}^{6.0}$ remotum, and with +D 3.0 s = $\frac{6}{3.0}$ or $\frac{6}{5.3.0}$ proximum. His pupil is half dilated and there is but little motion in the iris from adhesions to the capsule. The anterior capsule is nebulous, more deeply so below, in the area of the pupil, from capsulitis. The iris is bright, the cornea clear and the conjunctiva white. The eye is free from all tenderness. The left orbital cavity is healthy and he is not permitted to wear an artificial eye.

Remarks.—That this was a simple case of sero-plastic iritis, affecting the right eye primarily we do not believe. A careful survey of the history and symptoms will lead to the belief that this disease was an irido-cyclitis sympathetically induced from the use of a badly fitting artificial eye worn in the left orbital cavity.

From the fact that the disease began in the lower segment of the iris and ciliary body, of the right eye and in the lower region of the left orbital cavity, would suggest a causative relation between the disease of the orbit and that of the eye. The absence of

any known cause of the disease of the right eye primarily acting upon it, would favor the view of sympathy as a cause flowing from the left orbital cavity.

The fact that as the disease of the left orbital cavity disappeared so did that of the right eye, favors the conclusion, that the two processes are related. The fact that he had worn an artificial eye with impunity, for years, and that, after wearing a badly fitting eye but two or three weeks, pain and irritation of the orbital cavity and of the right eye followed; would suggest that the artificial eye had some connection with the disease of the right eye.

The progress of the disease, from below upwards in the right eye would lead to the surmise, that, the track of sympathy was through nerves, for if the disease reached the right eye by sepsis from the cavity of the left orbit, it is not unreasonable that all parts of the iris and ciliary body would be affected simultaneously, and not in segments as though transmitted through nerves from a limited area of irritation, the branches of the fifth nerve distributed to the lower left eyelid, and lower segment of the orbital lining, in this case. The fact is admitted that such irritations may be transmitted through sensory nerves and induce inflammation of other organs as well as of the eye.

The case points strongly to the importance of the employment only of properly fitting artificial eyes.

I should add, that, at this time the fundus cannot be plainly seen owing to the nebulous state of the anterior capsule. I can now, only by indirect light, catch a glimpse of one of the retinal vessels, which seemed of proper size.

The left eye was enucleated for the effects of a small portion of steel which lodged in the fundus.

September 14, 1884. He has, by my direction, omitted the use of atropine in the right eye, during the last nine days. His pupil is now about the normal size, is round and slightly movable. The iris is not adherent to the capsule at the edges of the pupil. The anterior chamber is ample in size. The effects of the atropine having passed off. I find he still requires +D 3.0s to read D 0.6 Snellen at 30 cm. Now as the nebulous state of the anterior capsule has improved since my last examination

and he requires D 3.0s to read normally, I infer that the structure of the ciliary muscle has been impaired by the cyclitis and hence the aid of + glasses is required, stronger than his age, 45 years, would demand in order to see. The iris is sluggish in its muscularity no doubt from the injury its structure has sustained from the iritis. I doubt if there be peripheral iritic adhesions to the anterior capsule in this case.

CASE II.—*SYMPATHETIC IRRITATION.*

Mrs. J. R., æt. 30 years. Consulted me February 24, 1882, for an injury of the left eye incurred eighteen months before, the result of a blow from a sharp stick of wood, which penetrated at the sclero-corneal margin, passed through the iris and wounded the lens. Now there was severe pain in the eye-ball, which was tender to pressure, but not tense. These attacks of pain recurred at intervals and did not yield from the use of anti-periodics or other agents employed. Her general system was depressed from suffering and the right eye was painful, and the sight impaired; but no structural lesions could be detected in it. There was evidently in the sightless left eye a low form of irido-cyclitis with choroiditis, as well as neuralgia from incarceration of the iris in the corneal wound and which was affecting the right eye.

I advised the removal of the left eye which, I did after chloroforming the patient on the following day, by Critchett's method. The flaps were secured by sutures, the recovery was rapid and the sight of the right eye was restored, and she now wears an artificial eye.

The eyeball was placed in Müllers' Fluid soon after removed, in which it remained until March 20, when it was examined and presented the following conditions: The lens was opaque, of a light brown color and smaller than natural. The great bulk of the vitreous was fluid and filled with pigment, but a portion about one-third its normal bulk was about its natural consistence and yellow in color. There is a pupil and the

iris is enclaved in the corneal cicatrix. The choroid and retina were in normal position.

Under the microscope the retina is seen to be infiltrated with pigment, blood globules and granules. The pigment of the choroid is massed at points and wanting at limited areas. The vessels of the choroid are obscure and the retinal vessels could not be seen. The circular and radiating muscular fibres of the ciliary muscle could be seen, but this muscle was infiltrated with blood globules, pigment and granular matter. The iris was infiltrated mainly with lymphous deposits. Its structure was obscured, partly destroyed, and its circular and radiating fibres irregular in disposition, and its pigment almost entirely wanting on its posterior surface. At the lower and outer quadrant it was inclosed in a cicatrix near the sclero-corneal margin. This scar on the inner surface of the cornea is infundibular, while its outer surface was elevated and its walls present a homogeneous structure. Within this cyst the diseased iris is adherent. There is a radiating bridge of true corneal tissue passing over this cyst dividing it into two compartments. At the lower extremity of this scar the corneal fibres come around that end of the wound, as though pushed aside by the vulnerating body, and which were never replaced.

Remarks.—We regard the corneal wound and the enclavement of the iris as the great source of the inflammation in this case: The continual irritation kept up by the dragging upon the iris producing iritis and followed by choroiditis and cyclitis. No doubt the ciliary nerves were involved in this scar, as well as those of the iris and ciliary body. These nerves we believe to be the seat of the irritation which produced the recurring attacks of neuralgia in the left eye, and which by reflex influence were transmitted to the fellow eye. The microscopical specimens show that the iritic angles were free, that there was no cupping of the optic disc, and this with the fact that the cystoid scar permitted transudation of fluids, would exclude the conclusion that the glaucomic process had to do with this case. We believe this case then to be one of sympathetic irritation of the fellow eye, the irritation transmitted through the ciliary nerves from the diseased eye and mainly from those enclaved in the scar of the left eye.

CLINICAL NOTES.

BY F. C. HOTZ, M. D., CHICAGO, ILL.

1. *Two Cases of Retro-bulbar Neuritis (Amblyopia Centralis.)*—The microscopical researches of Dr. J. Samelsohn¹, of Cologne, have fully disclosed the nature of the inflammatory in the optic nerves in those cases of central scotoma without any manifest changes in the fundus. He has shown the process to be primarily an inflammation of the interstitial connective tissue of the optic nerves with a tendency to proliferation and subsequent shrinkage, and that this shrinkage of the interstitial tissue eventually induces the destruction of the nerve elements. This being the pathology Dr. Samelsohn expected good results from the persistent administration of the iodide of potassium, whose resolvent power upon proliferating tissues is well known. Nor was he disappointed. "Since I have used," he writes, "the potass. iod. in large doses persistently for a longer period, I obtained so much improvement of all cases (save those which had already passed to the stage of atrophy of the optic nerves) that I can heartily recommend this treatment. I begin with two grammes pro die, gradually increasing the amount to as much as five grammes pro die, and never forget telling the patients that they must not expect the first signs of improvement before the expiration of six weeks. For according to my numerous observations this is the average period in which a diminution in the size of scotoma can be proven by the perimeter." But it stands to reason to admit that in fresh cases the improvement may be quicker; and in the following two cases I found it so.

The first case came to me shortly after I had read Dr. Samelsohn's very interesting paper.

Mr. H. W., æt. 50 years, healthy and robust, could see perfectly well until August 7, 1882. At 11 o'clock in the morning of that day, he wrote a report which he had to submit at a meeting of the lodge at two o'clock in the afternoon. But

1. "On the anatomy and nosology of the retro-bulbar neuritis (amblyopia centralis)," published in Graefe's Arch. f. O. xxviii, 1.

while he did not experience the slightest visual difficulty in the forenoon when writing the report, he could not see enough in the afternoon to read his own writing.

He then tried various kinds of glasses and, at last, on Aug. 29, came for an examination. I found the following *status præsens*. R. E. $V = \frac{20}{C}$, not improved by glasses; pupil slightly enlarged, clear media, normal fundus; retinal vessels show normal caliber. Central scotoma which projected at 12 inches, presents almost circular outlines with a radius of ten millimeters.

L. E. $V = \frac{20}{LXX}$; normal media and fundus; central scotoma, also of circular form, but with a radius of six millimeters.

The patient was given iodide of potass., ten grains three times per day.

Sept. 12, R. E. $V = \frac{20}{LXX}$, radius of scotoma reduced to three mill.; L. E. $V = \frac{20}{L}$, scotoma reduced to a faint mist over the fixation point.

Oct. 3, R. E. $V = \frac{20}{L}$, only a faint cloud on point of fixation; L. E. $V = \frac{20}{XL}$; no trace of the scotoma.

Nov. 22, $V = \frac{20}{XXX}$ in each eye; Snellen 3 with + 24.

Another case of the same character came under my care quite recently (Sept. 20). J. H., æt 32, butcher, woke up five days ago, with obscured vision. He is very positive that on the preceding evening he could see as well as anybody. He had not been working for five weeks, because he was not feeling well; since his sight became dim, he has frontal headache every morning.

Status præsens: The eyes appear normal externally and internally, excepting the pupils, which respond rather sluggishly to light, and, in fact, do not contract sufficiently. R. E. $V = \frac{20}{L}$, L. E. $V = \frac{20}{LXX}$, not improved by glasses. Central scotoma before each eye, with a radius of 4 millim. (projected at a distance of 12 inches). Ordered potass. iod. ten grs. three times.

Sept. 30, R. E. $V = \frac{20}{XXX}$ a faint haziness is the only trace of the scotoma, L. E. $V = \frac{20}{L}$ scotoma reduced to half-size.

2. *Iritis Serosa During Pregnancy*.—In January, 1882, I examined the eyes of a lady, æt. 30 years, of a nervous temperament and very delicate health. While the L. E. was healthy,

in every respect, the R. E. could just count fingers. There was no pericorneal injection, but a small cloud of parenchymatous infiltration occupied the center of the cornea and the posterior surface was thickly covered with a fine dust-like sediment. The pupil was regular and rather large; no formed opacities in the vitreous; papilla very red and rather indistinct.

The lady was in the fifth month of pregnancy, and the R. E. became obscured four weeks before I examined it. It remained in this condition until the child was born; then it made a quick and spontaneous recovery.

Two years previously the lady, while pregnant, had daily paroxysms of ciliary neuralgia in the R. E., which also ceased spontaneously immediately after the child was born.

3. *Retinal Hemorrhages of Unusual Size in the Region of the Macula with Perfect Recovery of Vision.*—Mrs. M. B., æt. 42, lost the sight of her L. E. quite suddenly about the middle of April, 1880. During her menstrual period she put her feet in very cold water, whereupon the menses ceased at once. Two days later while working over an embroidery, she became dizzy and felt a peculiar sensation in her L. E., and a few minutes later discovered she could not see with that eye. One week after this happened, April 22, I examined the eye and found the central region of the fundus occupied by a very large hemorrhagic effusion, the outlines of which described a complete circle, its diameter in every direction being about three times that of the optic disc. Its inner circumference just touched the temporal margin of the papilla, and its lower border covered a piece of a lateral venous branch. This blood disc was dark red; but there was a marked difference in the shade of the color between the upper and lower half, the lower being much the darker one, as if the extravasation was thicker or the coloring matter of the blood, had settled toward the dependent location.

The papilla presented a normal appearance; but along the upper branch of the retinal vein, at either side of the vessel, I noticed small hemorrhagic streaks. The patient could discern the light, but, as she expressed herself, it appeared as if she was looking through blood. R. E. M $\frac{1}{50}$; V = $\frac{20}{x}$; ordered elix. rhamn. frangulæ.

May 4, all traces of the hemorrhagic patches have disappeared; $V = \frac{20}{XXX}$.

May 24, $V = \frac{20}{XX}$; fundus normal.

To account for the complete recovery of the sight and the absence of any permanent lesion in the region of the yellow spot, we must assume that the blood was effused over the inner surface of the retina, forming a blood disc between the retina and vitreous body. If this amount of blood had been effused into the retinal tissues it would certainly have produced and left some disturbance in the perceptive elements of the macula (micropsia, etc.); if the hemorrhage had occurred in the choroid, the retinal vessels would not have been hidden by it from our view. But if the bleeding occurred at some distance from the macula, and the blood directly breaking through the inner layers of the retina spread out over its inner surface, we can understand how it could assume the round form and that the yellow spot did not sustain any injury.

In a later case of the same character I discovered in the fundus, between the papilla and macula, two short white streaks which I believe marked the spots where the hemorrhage occurred and where the blood made its way through the inner layers of the retina to spread out between it and the vitreous body. My notes of this second case read as follows: Mrs. L. B., æt. 57, suffering from dyspnoea and bronchitis, had inflammation of the lungs in June, 1882. During a paroxysm of coughing the sight of the L. E. became entirely obscured, but in the course of two months it gradually returned. On the 28th of July, the same sudden obscuration occurred to the R. E., and on August 19, 1882, I examined the patient. R. E. central scotoma of great extent, allowing only peripheric perception. Media clear; papilla normal; at its temporal margin an hemorrhagic effusion which extends far beyond the macula; its outlines describe a perfect circle; its diameter is at least three times that of the papilla; the lower portion much darker colored than the upper one.

L. E., H. $\frac{1}{8}$, $V = \frac{20}{XXX}$; clear media; in the fundus half way between the optic disc and the macula, two very small white streaks, like minute scars; the one streak lies in a line with the upper margin of the optic disc, and runs upwards and

outwards, and the other one lies in a line with the lower margin of the disc and runs obliquely downwards and outwards. No other anomaly was found in this eye.

This was the only time I saw the patient; but I was informed she gradually recovered the sight of her right eye, and died of apoplexy, in May, 1883.

4. *Salicylate of Sodium* vs. *Rheumatic Cyclitis*.—In May, 1880, I published in the *Chicago Med. Jour. and Ex.*, a series of cases which showed that salicylic acid exerts its salutary influence upon rheumatic affections of the eye with as much promptness as it does upon the rheumatic joints. In all the cases which were benefited by salicylic acid, it was evident that the ocular inflammation bore a close relation to, and was dependent upon the rheumatic state of the constitutions; it showed itself very rebellious to the usual applications alone, and was either preceded or accompanied by other manifestations of rheumatism in other parts of the body. Many cases have since been found to corroborate these observations; but a case of cyclitis which had been under my care recently, furnished such a good instance of the therapeutic value of salicylic acid in the affections above alluded to, that it may be briefly recorded.

Mr. J. A. E., æt. 38, a gentleman of very regular habits, presented himself, Aug. 15, at my office, with an incipient iritis of the R. E. Three days ago the eye became red and sensitive to light; and every night since then he suffered considerable pain. The pericorneal injection was not very intense; the iris appeared dull, and the pupil was contracted, but no posterior synechiae. Atropine was prescribed and the patient advised to abstain from his office work and to remain in his room.

Aug. 17. Pupil dilated regularly, but not *ad maximum*; iris duller; considerable engorgement of the conjunctival and episcleral vessels of the eyeball; upper ciliary region tender to the touch. Had very violent pain in eyeball last night. Thinking the atropine might possibly have caused the additional irritation, I substituted duboisine.

Aug. 18. Irritation subsiding and pupil dilated *ad maximum*; but ciliary neuralgia was as severe last night as before. Poulices and quinine.

Aug. 22. Every three hours during day and night an attack of ciliary pain; the poultices gave quick relief, and the eye felt very comfortable until the next attack set in. The patient has been in bed now five days, not exposed to drafts of cold or damp air; but for the past three or four days he has had a great deal of rheumatic trouble; now the knee joint would be painful and lame; then one shoulder be sore and stiff; and so the rheumatic pain has been traveling all over his body. He informs me that he has been subject to rheumatism these ten years. Upon this information *sod. salicyl.* five grains every two hours was ordered.

Aug. 23. Passed through the night without any real paroxysm of neuralgia; he woke up twice, when his eye felt a little uncomfortable, but there was no sharp pain.

Aug. 26. Eyeball free from redness, still at the upper ciliary region a limited tender area.

Aug. 30. Eye has been free from all sensitiveness to pressure and light these two days. *Salicyl. sod.* discontinued.

Sept. 10. Eye has been perfectly well; no return of neuralgia; pupil of natural size, and mobile; V normal.

A CASE OF SEROUS IRIDO-CHOROIDITIS OF BOTH EYES ENDING IN TOTAL BLINDNESS.

BY CHARLES J. KIPP, M. D., NEWARK, N. J.

W. D. R., aged 16, a very bright boy, consulted me for the first time on September 9, 1876—eight years ago. I learned from his mother that he had an attack of left hemiplegia in infancy, from which he has only partly recovered, and that he passed through many diseases during his childhood. During the last ten years he has been in excellent health. His eyes were perfectly healthy till January 31, 1876, when his right eye became, suddenly, violently inflamed. A few days later he noticed that the eye was blind. The left eye did not become affected. He was under the care of a homeopathic physician, who called the disease an iritis.

The examination made by me on September 9, 1876, showed

that the left eye had compound myopic astigmatism ($-4 \text{ D S } \subset -1 \text{ D C } 90^\circ$) and that its sight was above the average S_{rv}^5 . This eye was perfectly healthy. *The right eye was totally blind.* It was free from all signs of irritation. There was no conjunctival injection. The cornea and the aqueous were clear. The pupil free and active. The iris somewhat atrophic. On the anterior capsule were numerous spots of brownish pigment. The vitreous was very hazy, and the nasal half of the retina was opaque and detached. The other half of the retina and the disk were hidden from view, the tension was somewhat reduced below the normal. I advised him not to use his eye for near work and I gave him a glass which corrected the error of refraction.

During the following two years and a quarter I saw him occasionally and as the good eye continued to be healthy I allowed him to accept a position as salesman in a store. Shortly afterward he had several attacks of severe pain, accompanied by redness in the left (good) eye. I did not see the eye while in this condition, but some days later when he came to me no signs of disease remained. With the exception of absolute rest for the eye, I advised no treatment.

Three months later, while witnessing a performance in a theater, the right (blind) eye became suddenly very painful and inflamed. On the following morning I found intense ciliary injection; cornea and aqueous were clear, and the iris apparently unchanged. The vitreous was very opaque. Detachment of retina total. The ciliary region was very painful to the touch. T—1. Leeches were applied to the temple, ice compresses kept constantly on the eye, and a 1 per cent. solution of atropia instilled at short intervals. Under this treatment the pain soon disappeared, and the ciliary injection subsided gradually.

Ten days after the beginning of this attack there was a relapse of the inflammation. The iris became discolored and swollen and a yellowish mass was noticed behind the lens. On closer examination it was found that the yellowish mass was situated near the posterior pole of the eye and that it was of about the dimensions of the disk. Whether it was located in or

behind the detached retina could not be made out. In spite of all treatment numerous posterior synechiæ formed which gradually led to complete occlusion of pupil. There was at no time a plastic exudation in the pupil, or in the anterior chamber.

From March, 1879, to September 1, 1883, he had no inflammatory attacks in either eye. But about this time, after prolonged exposure to the glare of the sun, during a sea voyage, the blind eye became again painful and red. In application to the eye brought however speedy relief.

On September 10, 1883, I saw him again. Two days before he became greatly heated in running some distance to catch a railroad train, the following morning *his good eye* was considerably inflamed. The ocular conjunctiva was slightly œdematous and injected, the lids a little puffy. Cornea, aqueous and lens clear. Iris apparently normal. Vitreous slightly hazy. Lower inner margin of disk blurred. At the macula there was an irregular distribution of the pigment epithelium, which was formerly entirely regular. No other abnormality about fundus. S $\frac{5}{1\frac{1}{2}}$. Ordered leeches to temple, ice to lids. On the second day after this the patient was seen again; there was increased redness and injection of scleral conjunctiva. The lids were somewhat more puffy. The eye had a suffused, watery look. The cornea seemed somewhat hazy throughout and on Descemet's membrane were deposited very many small black particles. The aqueous was cloudy, the iris was apparently normal and the pupil was of normal size, and active. The lens was normal, the vitreous was very cloudy. Of the disk only the margin could be indistinctly seen, its central part being hidden either by an exudation in its centre or a membranous formation in the vitreous immediately in front of it. The region of the macula was slightly more opaque than the rest of the retina. A closer examination was prevented by the opacity of the vitreous. S $\frac{5}{LX}$. Tn. More leeches were applied to the temple. Atropia was instilled at short intervals and calomel and opium were given internally.

On Sept. 13, that is the following day, there was increased chemosis. The pupil was widely dilated. otherwise no change. Tn. Has a dull pain in the eye and temple.

This condition continued till Sept. 17, when there was apparently less opacity of the vitreous. On this day he could tell without much difficulty the time from my watch, held eight inches from the eye. As there was slight soreness of gums the calomel was discontinued and salicylic acid and carb. soda substituted. This treatment was continued for ten days, during which I was absent from town. Dr. Rankin, who saw the patient for me, states, that considerable improvement in the condition of the eye and in vision was observed during the first five days, then after a severe tooth-ache, which was relieved by plugging the cavity of the tooth with cotton saturated with chloroform increased chemosis and greater opacity of vitreous was noticed. At same time greater impairment of central vision and a marked concentric contraction of the visual field was noticed and a decrease of tension.

On October 1, I saw him again. There was less œdema of the lids and of the ocular conjunctiva, but otherwise there was no change. He could see the movements of the hand only immediately in front of him. Light thrown into the eye with a mirror was perceived in all parts of the retina. I discontinued the salicylate of soda and gave him hypodermic injections of a $\frac{1}{3}$ grain of pilocarpine once daily. In spite of the treatment, the opacity of the vitreous increased and the deposit on Descemet's membrane became thicker. T—1.

About October 6, he had severe neuralgic pains in the right side of the jaw and the right (blind) eye became quite red, but this passed away again in a few days.

On October 14, he had for the first time light flashes in or before his left eye. The photopsiæ annoyed him a good deal.

On the following day I permitted him to take a very short walk, and on his return home he noticed that the upper half of the field was absolutely dark, the line separating the light from the dark part being irregular.

On the following day, October 16, I could distinctly recognize a large detachment of the retina, above and outward. The patient was again put on his back, and the bichloride of mercury and iodide of potassium were given in addition to the pilocarpine.

Since then total detachment of the retina seems to have tak-

en place as he is now (November 1.) unable to perceive in any part the light thrown in the eye with the mirror. T — 1. There is now but little injection of the scleral conjunctiva. The cornea is slightly hazy and on Descemet's membrane is a thick deposit of very small black precipitates. The iris is slightly discolored, but not changed in texture. The pupil is widely dilated from atropia. The lens is clear. The vitreous examined by oblique illumination seems quite clear in its anterior portion. With the ophthalmoscope an indistinct reddish reflex is seen for a moment which is immediately changed to a whitish blue color, no matter in which direction the eye is turned.

May 1, 1884, a whitish membrane with a few broad red streaks on it is now seen behind the lens.

The condition here described was still the same on June 1, 1884.

July 1, 1884, the pupil is much smaller since the instillations of atropia have been stopped and some posterior synechiæ are visible. The lens is becoming opaque. The globe is gradually shrinking. There is no perception of light. T — 2. The patient is in most excellent general health, and the stunted arm and leg seem to have gained considerably in power.

REMARKS. I do not remember ever before to have seen a case of serous irido-choroiditis in which in spite of active, and I think appropriate treatment, the eye was so rapidly and completely destroyed, as in the above case. Beginning with moderate injection and œdema of the ocular conjunctiva and slight diffuse haziness of the vitreous, but without visible changes in the iris and without pain, the disease in the course of two days made the aqueous and the vitreous so turbid that vision was reduced from $\frac{5}{15}$ to $\frac{5}{15}$. Although there was some slight improvement in vision, less chemosis and less turbidity of the vitreous about the eighth day of the disease, a detachment of the retina occurred probably on the sixteenth day, as on this day marked contraction of the visual field and great impairment of the central vision was noticed. In view of the fact that both eyes were attacked by the same disease, although not at the same time, and that in both it was about the same course, it seems reasonable to assume, that the eye disease was caused by an unrecognized depraved state of the constitution.

PLASTIC EXUDATIVE CYCLITIS.

BY J. S. PROUT, M. D., BROOKLYN, N. Y.

WITH THE MICROSCOPICAL EXAMINATION OF A CASE BY JAMES L. MINOR, M. D., OF NEW YORK CITY.

Three cases of this rare disease having come under my care recently, it has interested me to converse with my colleagues about them and to look a little into the literature of the subject. To one point in diagnosis I wish to direct attention: These plastic exudations, in some cases at least, are seen to be in contact with the posterior surface of the lens, the anterior part and general shape of the globe being unaffected. What would be the condition of an eye-ball in which a glioma or sarcoma had grown so as to completely fill the vitreous chamber?

CASE I.—B. D., æt. 9, came to the Brooklyn Eye and Ear Hospital December 26, 1882. His mother said that his right eye had been sightless five or six months; there had been no precedent general sickness. It had for one week been sore. The ball was *very hard*; there was considerable ciliary injection; the iris—surface was dull; the condition of pupil not noted. The eye was found to be sightless. Left eye V = $\frac{20}{XL}$; improved by + $\frac{1}{16}$ sph. The ophthalmoscope showed the deeper media hazy, a grayish reflex round ciliary region; centrally the reflex was dim. A solution of eserine was instilled, but without effect on the tension. The case was believed to be an exudative inflammation of the anterior portion of the uveal tract. Eserine producing no effect, atropine was tried, causing some dilatation of the pupil, but no other effect. Although the tension was excessive from the beginning there was no complaint of pain. Seven weeks later the sclera in the superior ciliary region showing a tendency to yield, the pigmented tissue showing through, a sclerotomy upward was tried, but without effect on the tension. His general health seemed to fail under the existing, though little complained of, pressure of the disease, and on March 13, 1883, the ball was enucleated, placed in Muel-

ler's fluid and given to Dr. James L. Minor for examination, whose report is appended.

The diagnosis was not clear although all the appearances led me to consider it an inflammatory product rather than a neoplasm; in other words *plastic* or *exudative cyclitis*.

After the enucleation the boy's condition very decidedly improved.

DR. MINOR'S REPORT.

After hardening in Mueller's fluid and later in alcohol, a meridional section of the globe was made.

Macroscopic Examination.—The cornea, iris and lens were in normal condition and position. There was an irregular umbrella-shaped detachment of the retina, its connections being retained only at the optic nerve entrance and the ora serrata. As it approached the latter it became noticeably thickened, as was also the ciliary body. The cavity thus formed was occupied by the remains of the vitreous body and patches of hemorrhage. The space between the retina and choroid was filled with a substance resembling the vitreous except at a point which corresponded with the anterior supero-external quadrant of the globe, where there was a hemorrhage that coincided with a slight thinning and ectasia of the external tunics of the ball. Sections were made and subjected to the double staining with hæmatoxyline and eosine.

Microscopical Examination.

Cornea.—Normal, except a slight infiltration of leucocytes near the limbus.

Sclera.—Normal, except at the ectatic point where it is thinned from atrophy, and there is besides slight infiltration of its inner layers in the ciliary region.

Iris.—A little thickened from slight cell infiltration, no adhesions. Ciliary body enlarged from infiltration of lymphoid cells, amorphous coagulated albuminous exudation, new blood vessels and hemorrhagic spots

Choroid.—Has largely disappeared and nothing definite could be made of its structure.

Retina.—Thickened and of irregular outline throughout its entire extent. Abundant infiltration of lymphoid cells, numerous hemorrhagic patches, marked vacuolization of its structures; some of the vacuoles being occupied by coagulated albumen, while others were empty. These changes were most marked near the ora serrata and least so near the optic nerve entrance. In the region of the ora serrata it was in places difficult or impossible to distinguish the retina from the inflammatory products. All its layers were involved.

Optic Nerve.—Showed vacuoles and very slight cell-infiltration in its ocular portion; the rest was normal.

Vitreous.—Is occupied almost entirely by hemorrhagic exudations. The material occupying the space between the retina and choroid was amorphous—the remains of the subretinal fluid, the albuminous parts of which had been coagulated. There was also a large hemorrhage corresponding to the ectasia of the external tunics of the globe.

Remarks and Diagnosis.—The case seems to have been one of cyclitis with a marked tendency to hemorrhagic exudations. The other appearances described were secondary to this process, and there was nothing to suggest either gliomatous or tuberculous character.

Pathological Laboratory, Eye and Ear Infirmary.

Jan. 21, 1884.

New York.

CASE II—John M., æt. 5, was brought to the Brooklyn Eye and Ear Hospital by his father on April 5, 1884, who stated that the boy's diseased eye had seemed to be good until two weeks before. There was complaint of pain; but no ocular injection. On the lower part of the cornea there was a white cloud resembling a lead stain; the ball was *hard*. Through the somewhat dilated pupil a grayish reflex could be seen. The ophthalmoscope showed a dense gray exudation close behind the lens, the anterior surface of which, apparently occupying the hyaloid fossa, appeared smooth and without vessels. He was seen by some of the New York ophthalmologists, who agreed with me in thinking the case one of exudative cyclitis, and advised enucleation. In the middle of June some lateral limitation of motion was

found, suggestive of rupture or extension of the posterior pole of the ball. Distension existed in front, caused by the extreme tension; the sclera was thinned and the uveal pigment showed through, as in the case of B. D. Although the best possible result would be phthisis bulbi, still, as there seemed no urgency as to removal, an attempt was made to arrest the further progress of the disease by giving opiates for the relief of pain and small doses of calomel with extract of cinchona. This at times seemed to promise success; the prominence of the ball and the pain would become less, but exacerbations soon recurred. For some little time he did not attend. On July 23, I was requested to see him at his home in consultation with the family physician. Three days before he had become unconscious; had then had convulsions with periods of consciousness. When seen he was comatose, the ball strongly protruding, soft; the cornea dry. His history and condition suggested rupture of the ball posteriorly with extension of the inflammation to the brain. He died on the next day. No post-mortem could be obtained.

It is evident that in this case the ball should have been enucleated early in its course, but it was hoped that the disease might be arrested as in the following case, and only shrinkage of the ball result.

Noyes says:

“To remove an eye which is the seat of some disease that resembles, but is not glioma, is a needless mutilation. (*Diseases of the Eye*, N. Y., 1881, p. 302.)

CASE III.—Within three years, I think, I saw a case at the Hospital that had been under the care of one of my colleagues, which presented a well marked “amaurotic cat’s eye.” It was quite a young child and was the first diagnosis of the sort, plastic cyclitis, that I recollect making. Unfortunately the record cannot be found. I do not recall the condition of the tension, nor previous history. There was no pain. Small doses of the bichloride of mercury and iodide of potassium were given and afterwards with the ophthalmoscope a faint reddish reflex from the fundus could be obtained. The case then ceased to attend the Hospital.

Cases of plastic or exudative cyclitis, simulating glioma or

sarcoma are rare, though described in some of the books. The three cases given above are the only ones in which I have made this diagnosis. My colleague, Dr. A. Mathewson, whose experience I presume to be greater than my own, says he does not recollect ever making it. Nor have I found all of those with whom I have talked *practically* familiar with the subject. It is unfortunate that my description of the cases is not more full, but the symptoms pointed sufficiently strong, in my opinion, to an inflammatory character, and therefore by a careful observer should not have been mistaken for glioma. In all the anterior chamber was clear, the iris was but little involved, the pupil was large or became so; in two the tension was extreme, in that of J. M. only, was there pain. As to *cause* nothing could be learned. There was in no case any history that could justify the diagnosis of metastatic choroiditis, nor had there been any injury. In B. D.'s case, in which the greatly increased intraocular tension caused yielding of the sclera without producing pain, the general health evidently suffered from the irritation; from the time of the enucleation his condition decidedly improved. In J. M.'s case there was considerable pain at times, which could be controlled by opiates, but enucleation was postponed too long in the hope that the inflammatory process would cease. The question also arose: will not the removal of the ball in so young a child cause deformity of the face from arrest of development in the orbit? On this point opinions differ. One whom I consider an authority says if enucleation is done under five years of age the bony walls of the orbit do not develop as they should. Another, equally good, says that this is not so. Which is right?

Arlt speaks of cyclitis with fibrino-plastic exudation, which, from behind the zonula, in many cases, extends over the anterior surface of the vitreous, filling the hyaloid fossa and extends sooner or later into the posterior part of the vitreous. He does not mention the tension here, but further on he says that, when the exudation is exclusively or mainly serous, the increase of intra-ocular tension causes blindness. When the tension is decidedly increased and we exclude other causes, such as glioma and tumor, we can with certainty decide that cyclitis exists (Klin-

ische Darstellung der Krankheiten des Auges, Wien., 1881, p. 261 and seq.). *Wecker* does not mention such cases as those I have described in his contribution to Graefe-Saemisch, nor do I find mention of them in *Wells* (Diseases of the Eye, Phila., 1880). *Knapp* (Intraocular Tumors, N. Y., 1869) under the head of glioma of the retina, says, there are many morbid changes in the eye, inflammatory and non-inflammatory, which may be mistaken for glioma and sarcoma. Of the former—inflammatory—he particularizes suppurative choroiditis after cerebro-spinal meningitis. In the Appendix he says, that among the various products of suppurative plastic choroiditis, many, in the period of growth or atrophy, are not entirely unlike tumors, but are distinguished from them by their course. *Mooren* in his "Fuenf Lustren" does not mention plastic or exudative cyclitis, but in the "Statistik" gives 78 cases of monocular and 18 of binocular exudative choroiditis, but says nothing of them in his clinical remarks. Nor do I find in *Michel* (Lehrbuch der Augenheilkunde, Wiesbaden, 1884) anything on the subject under consideration. *Noyes* says we may have exudations behind the lens constituting varied forms of vitreous opacity. If serous exudation predominate we may have increase of tension. Further on he refers to the paper by *Raab* (Archiv. f. Ophth. xxiv. iii. p. 163), who gives the anatomical description of three eyes enucleated as gliomatous, which had a peculiar deposit of fibrous tissue behind the lens, resulting from cyclitis or choroiditis. In all there was increased extension, absence of inflammatory tokens in the anterior portions of the globe and the presence of a light-colored mass in the depth of the eye. These cases were aged 10, 4 and 8 years. At the end of his paper *Raab* gives 28 references to the literature of his subject—Das Amourotische Katzenauge—in which he mentions *Allin's* case of supposed glioma reported in Trans. Am. Oph. Society, 1872. *Alt* figures and describes the appearances in plastic cyclitis in his admirable "Lectures on the Human Eye" (N. Y. 1880, p. 106 and seq.) See also *Dr. L. Howe's* report of a "case illustrating the difficulty in recognizing glioma," in the Trans. Am. Oph. Society, 1883, (Vol. iii. part iv., page 591), in which he refers to a paper by *Nettleship* on the same subject.

TRAUMATIC LUXATION OF THE LEFT CRYSTALLINE LENS, INWARDS, DOWNWARDS AND BACKWARDS. SPONTANEOUS RESTORATION TO NORMAL POSITION WITH FAIR VISION.

BY B. E. FRYER, M. D., U. S. A., KANSAS CITY, MISSOURI.

Second Lieutenant V. E. S——d, 13th Infantry, 23 years of age, an officer on duty at the school of application for cavalry and infantry at Fort Leavenworth, of excellent health and physique, while at work in practical telegraphy was accidentally struck on the left eye-ball by the sharp end of a piece of zinc wire, such as is used in telegraphy, September 16, 1882. At the time of the accident this officer was at the upper end of a telegraph pole, and was about to fix some wire to an insulator. One of his comrades on the ground throwing up to him a piece of the same kind of wire about two feet in length, bent into a hook at each end, one of the hooks catching on the wire already on the pole and being held from rising higher, it swung round with much force, the other hooked end, which was quite sharp, struck the eyeball from above downwards, making an irregular wound about four and a half mm. in length in the sclera two mm. above the upper portion of the cornea, and about seven mm. from its vertical diametric line. The wound at its lower extremity reached the corneo-scleral margin. The force of the blow was so strong and the pain caused by the wound it produced so severe that the officer was only able to prevent himself from falling to the ground by great effort.

I saw the patient two hours after the reception of the injury, and found severe pain, well marked photophobia and conjunctival congestion. Discovered that there was a stain of pigment from either the ciliary body or the iris, or both, in the wound; the anterior chamber full of blood. Atropine instillations had been ordered by my assistant before my arrival, and these were continued; and in addition I ordered iced compresses to the injured eye; the patient to remain in bed in a darkened room.

A diagnosis as to the full extent of the injury at this time was not made and could only be uncertain. The prognosis was guarded, it being of course very possible that if there were a laceration of the ciliary body only, with no other deep lesion, that ciliary inflammation might make enucleation essential.

The following day the conjunctiva was more congested and the pain had not lessened, there was the throbbing too and supra-orbital pain. Much of the blood in the anterior chamber had been absorbed. Pupil as far as could be made out was dilated, but not regularly so, and was not circular. A hastily made test of vision showed only a quantitative perception of light. Duboisia sulphate instillations replaced the atropia solution, and the iced water in which the compresses for the eye were placed, was carbolyzed.

The treatment was continued the same for a week when the active symptoms subsided, and the iced compresses were discontinued and now the eye was bandaged, a portion of absorbent cotton being placed over the eyeball, which dressing was to be changed twice daily and duboisia instillations used. From the eighth day the patient was allowed to sit up a few hours each day in the darkened room.

It was now found that the visual field was diminished except at its outer portion though vision had improved so as to allow counting fingers at three feet. But until the fourteenth day after the injury the photophobia was too great to allow of a complete examination of the eye, even by oblique light and our examination up to that time was that of a hasty glance, the eyeball being only very moderately illuminated.

On the fifteenth day, a fuller examination being possible, it was found, as had been feared, that the lens was dislocated. It was displaced downwards, inwards and backwards. The external periphery of the lens could be seen quite distinctly, and the optic disc and retinal vessels were not difficult to observe when sought for external to the outer edge of the lens, though there was slight cloudiness in the vitreous. The lens was slightly cloudy also. Aqueous humor free from blood. Wound entirely healed.

The treatment was continued with the exception that the patient was allowed exercise in the open air after sunset, and after the lapse of another week to be out a short time each day in daylight, with a shade over the injured eye. Vision during this time was gradually improving and at the end of five weeks was $\frac{2}{c}$. The duboisia was gradually discontinued and only resorted to occasionally when slight pain manifested itself.

Vision steadily improved and by the middle of November was $\frac{2}{c}$, with no further gain obtainable by glasses.

On December 2, the pupil being dilated, I found that the lens had regained its normal position, or very nearly so, though it was still cloudy, apparently less so than it was two weeks before this time. The optic disc and retinal vessels were now quite readily seen through the replaced lens.

The patient at the latter part of the winter of 1882-'83 was granted a year's sick-leave and I have not seen him since, but in a letter just received from him dated October 3, 1884, written at Fort Wingate, New Mexico, I find that he is on duty again, and he writes that his vision in the injured eye remained until last March, as it was when I last saw him, but since March, 1884, it has improved steadily, and he says he can now read type (about Jagers' 14), at a moderate distance from the eye, but that the words in the center of the field are not so plain as at the periphery.

Lt. S. has, of course, been warned as to the possibility of sympathetic trouble in the future.

ON HOLTZ'S METHOD OF OPERATING FOR ENTROPIUM.

BY FRANK ALLPORT, M. D., MINNEAPOLIS, MINN.

The multiplicity of methods of operating for the relief, or cure of entropium, shows conclusively the unsatisfactory results that are usually obtained. This may perhaps be partially due to the fact that the different devices are usually quite ingenious,

and complicated in their mechanism, and difficult to render comprehensible, without practical demonstration; still, it does not appear that this is the only explanation for unsatisfactory results. The chief reason resides, I believe, in the uncertain and unscientific nature of the operations themselves. Take, for instance, that method of operating which consists in cutting out a portion of skin and orbicularis, and then bringing the lips of the wound together by sutures. Everybody who has used this method must have been frequently disappointed in its results. It causes a lifting of the lid, much more than an eversion, and is usually (especially in flabby-skinned persons) only a temporary procedure at best; for, in a short time, the ptosical and encurved condition is apt to return, and the patient's position is even worse than it was originally. I have seen many patients, upon whom several operations of this nature had been performed, still suffering from severe entropium, whose lids have been so shortened as to render direct apposition of the two lids impossible. In this method of operating, we are compelled to base our hopes of success upon something entirely untrustworthy and unscientific. We extract a piece of tissue, hoping that it is just enough (taking into consideration the cicatricial contraction) to evert and lift the lid to its proper position. In the first place, we cannot accurately calculate the exact amount of tissue necessary to accomplish this end; and even if this were possible, we cannot estimate the extent of cicatricial contraction that will occur. Besides this, the point of operation is situated in movable tissue, and is attached to no fixed and definite point. In the course of time the skin begins to pull in the direction of the lid margin, and, before long, another operation is indicated.

It is needless to enumerate or criticise the different methods of operating for entropium.

They all have their advocates, who possibly feel, that, new methods are needless innovations. Perhaps I am yielding to a bias when I urge the general adoption of Hotz' operation. Still I can conscientiously assert, that after using other methods in a diversity of cases, I have discarded them all, and now use only Hotz'. Of course, I sometimes employ a grooving of the tarsal cartilage, or canthoplasty, where such variations are indicated;

but with this method of operating I very seldom have occasion to resort to these modifications.

I regard the principle upon which this operation is based as the correct one to be adopted in operating for entropium. This is, in brief, attaching the lips of the wound to the tip of the tarsal-cartilage, which is supported by the fascia tarso-orbitalis, which, in its turn, derives a firm attachment from either the supra- or infra-orbital margin. For a further elucidation of this principle, and for the different steps of the operation, I refer the reader to Dr. Hotz' articles on the subject in the "Archives of Ophthalmology," July, 1879, page 249, and December, 1882, page 442.

A model operation for entropium would be one that permanently everts the edge of the lid, without loss of skin, or the production of a deformity. I have now operated on fifty cases after Hotz' method, and feel that when the operation is properly performed, these results will almost always be attained.

As Dr. Hotz remarks in one of his articles on the subject, this is no operation for surgeons who have only a short time to spare. It must be done carefully, and laboriously, with much attention to each and every detail.

When performed in this manner, and cosmetic and satisfactory results are obtained, even in very aggravated cases, I am confident that few practitioners will consent to return to any other method of operating for entropium.

CORRESPONDENCE.

The following correspondence was received from Dr. C. A. Bucklin, New York, on a new polariscope for testing pebble lenses:

This instrument consists of a nickel cylinder $\frac{3}{4}$ of an inch in length and $1\frac{1}{4}$ inches in diameter. The cylinder has a slot at right angles to its axis which will receive any lens the quality of which is to be tested. Each end of this cylinder has an ornamental tightly fitting nickel head through the centre of which

there is an opening $\frac{1}{8}$ of an inch in diameter. Securely fastened in each of these openings is a most perfect polarizing plate, the axes of which are set at right angles to each other.

It will now be found that no light can be seen through the instrument, these polarizing plates having entirely absorbed it. If a pebble lens, however, be placed between these plates the light comes through very brightly. No variety of glass lens can bring about this effect.

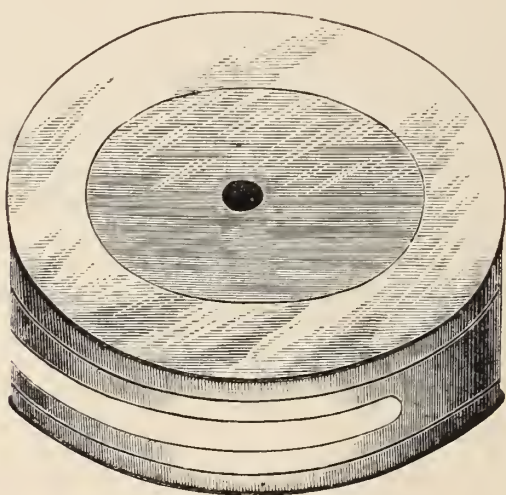


Figure 7.

The oculist or optician can determine at once whether a lens be pebble or glass. The merits of this instrument when compared with any other contrivance for this purpose are: It is so compact it can always be carried in the vest pocket. It is very ornamental. It can never get out of order or adjustment, thus preventing the fraud which is so frequently practiced of exhibiting glass lenses for pebble through a "pebble tester" the adjustment of which can be so changed by a single shake as to make it lie.

It is thus supplied with the most perfect polarizing plates that have been used for this purpose. There is a great lack of uniformity in the polarizing plates which have been used for this purpose in other instruments. Some are of a poor material and will not shut the light out perfectly, while others are not of sufficiently compact material to prevent the natural cleavage of the stone from showing in the plates, thus causing them to fall to pieces. Another advantage is its cheapness; it can be furnished for one dollar and fifty cents. The old form of pebble tester sells for two dollars and fifty cents.

The placing of an instrument so perfect upon the market at such a reduction of price was the result of an accident which is not without interest to all.

Notwithstanding the statements of all the mineralogists that the material for these polarizing plates can be found at so many places, I found, when the Spencer Optical Mfg. Co. requested me to produce a cheap and effective apparatus for testing pebbles, that neither the English, German, French nor American market could produce the mineral in a rough state of proper quality and sufficient quantity.

The best price I could obtain in Paris through our broker there, for each set of plates of the quality desired, was one dollar and fifty cents.

I was about to give up the project after having manufactured 1000 of the metallic frames for the instrument when I accidentally heard of some fourteen lbs. of this mineral which was mined in Brazil some seventy-five years ago. It was sent to Paris and held there many years at a gem value.

An American dealer in gems some years ago bought the entire collection as a speculation and brought it to New York intending to cut it into gems. Although the density was sufficient to enable them to cut and polish it for gems, the color which is a light green, is not the shade most in demand.

I was shown a shade of this stone of no greater density than that we are now using in the polariscope, gems from which were said to bring four hundred dollars each. This statement is

made by one of the most reliable houses in the city and I give it as it was made.

I believe this collection to be the only one of the size and quality to be had. We intend to manufacture as many polariscopes for testing pebbles as is possible from this material without any expectation of being able to continue their manufacture when this material is exhausted. Independent of the merits of glass and pebble lenses there always has been a demand for pebbles, and there always will be some persons who will have them because they are pebbles, without any further reason.

I find in my practice a large class of business men who wear an eye glass on a hook when not in use. If the lenses are glass in some kind of business they will become so scratched in a week that they are not fit to use. These men are willing to pay for pebbles which will not scratch. A frequent question which is asked by all classes is, "Are the glasses I am wearing pebbles?"

With the "*Polariscopic Pebble Tester*" which is always with you in your vest pocket, the question is answered with absolute correctness, without effort, and usually greatly to the satisfaction of the enquirer.

The following letter has been received from Dr. Lucien Howe, of Buffalo.

HEIDELBERG September 18, 1884.

Those who read with interest each year the "Bericht" of the Heidelberg Ophthalmological Society appreciate of how much importance are these meetings in the diffusion of knowledge in this department.

Most of the leading oculists in Germany proper were present this year several from Austria and a few from more remote countries. There were, in all, between forty and fifty. An informal meeting was held Sunday evening and the next morning at nine the Society began its work proper.

Professor Arlt, as the patriarch of ophthalmology, occupied the chair, but soon asked Dr. Noyes, of New York, to officiate in his stead. Dr. Hess, of Mayence, was at his post as Secretary.

According to the list prepared Dr. Gunning was to have begun with clinical communications concerning Trachoma and as to the ætiology of

glaucoma, but these papers with one by Dr. Cohn were passed by because of the absence of the writers.

Dr. Vossius being next in order gave an account of attempts to infect the cornea with lepra. The results were rather of a negative character, and from them no positive conclusions could be drawn.

The next paper on "The Course of the Optic Nerve Fibers," by Dr. Ulthoff, of Berlin, was interesting in the extreme; he had observed three cases which were subsequently examined post mortem, one of which illustrates the general line of study pursued. The patient referred to had entire loss of vision in about the upper and inner quadrant of the field in one eye, and the corresponding section of the optic disk, lower and outer, was entirely atrophied. The rest of the nerve and retina were perfect, as seen with the ophthalmoscope or tested subjectively. Ulthoff inferred that this atrophic bundle might be traced backward by making sections of the nerve at various points. This was found to be the case. It appeared that the wedge shaped bundle of fibres went at first back and downward, at the same time flattening out slightly and approaching the centre of the nerve. As the atrophic portion passed through the optic foramen, it resumed its triangular form, but in the chiasma spread out into a narrow band going from side to side. These observations not only corroborate a similar one made before, but show that this path of inquiry must lead ultimately to a more exact knowledge of the course of the optic fibres.

Dr. Eversbusch of Munich presented a paper upon the structure of the iris. He stated that the so-called "radiating fibers" which he and others had regarded as muscular were in reality nerves. It is true animals having an elliptical pupil possess a sector of well marked muscular fibers radiating from each extremity of that opening. This was demonstrated most satisfactorily, later, in the iris of the horse. In man and other animals with a circular pupil, however, it was impossible to assert the existence of any radiating or dilatatory fibers. In the figures commonly given the interlacing bands of the sphincter are seen bending at right angles off toward the periphery of the iris. Eversbusch, however, showed that these were only parts of the sphincter, for, in these sections made parallel to the surface, if the next one above or below be examined, it is possible to trace the remaining portion of the fiber which was apparently becoming a radiating one but which in reality went back into the sphincter.

Dr. Brettauer of Triest read a paper handed to him by Dr. Carl Carson, of Vienna. It related to the effects of cocaine hydrochloric as an anesthetic. He stated that a two per cent. solution dropped upon the conjunctiva would produce a partial anesthesia of that membrane and of the cornea, together with some dilatation of the pupil. This was demonstrated later at the clinic of Prof. Becker, and the subject attracted much interest. A man whose left eye was healthy and with the ordinary sensibility was chosen for experiment. Two drops of a two per cent. solution were placed in the conjunctival sac; in about ten minutes it was noticed that there was a distinct difference in the reaction of the two eyes to any irri-

tant, and within five minutes more this anesthetic effect was quite remarkable. The palpebral, the ocular conjunctiva or the cornea could be touched with a blunt probe without causing the patient to even wink.

When the cornea was pressed so firmly as to indent it, the lids closed, but no pain was complained of. A sharp probe upon the cornea or conjunctiva was said to "scratch uncomfortably," and finally when a speculum was introduced or the conjunctiva caught in the toothed forceps the man complained that they "pulled," but the degree of reaction was comparatively slight. These effects, last it is said, for only half an hour or more, and although it has the disadvantage of dilating the pupil for a longer time it is evident that an efficient remedy has been added to those valued by oculists.

In the session for demonstration Prof. Hirschberg gave the history of a case of metastatic choroidal sarcoma, accompanied by the specimen and by drawings of its microscopic appearances. After first showing itself in the eye the disease extended to other portions of the body, ending in the death of the patient.

Dr. Plehm presented an optometer consisting of a convex glass at each end of a tube. The degree to which it was necessary to approximate or separate these two lenses of equal focal power, would indicate the degree and kind of ametropia.

Dr. Mayerhausen showed a self-registering perimeter. This was a modification of Foerster's with an attachment like that suggested by Stevens. As a whole it appeared no more useful but more complicated than either of the originals.

In the next session for the reading of papers Prof. Noyes, of New York detailed the manner in which he had succeeded in removing a cataractous lens which had been dislocated into the vitreous and was floating there. The patient laid on his breast, his head hanging forward from the table, and thus the lens was caused to fall downward into view. While in this position an anesthetic was given, and a suitable curved needle passed through the sclera fixing the lens and holding it in place. Then the patient was turned on his back and the lens removed by a corneal incision. The wound healed satisfactorily, the form of the globe together with some vision was retained.

Dr. von Hoffmann brought up the question of the treatment of diphtheritic and croupal conjunctivitis by a communication relating to these form of inflammation. The following discussion showed the general opinion to be, that we do not yet know of any better method of treating these cases than with iodoform, and when this is properly done the prognosis is favorable.

Some other papers were presented and demonstrations made, but the foregoing includes the most prominent to be mentioned in a short notice like this.

The social features of the occasion were also very attractive, and in general this meeting of the Ophthalmological Society must be counted among its most interesting and important.

CORRIGENDA NO. 6.

Page 191, 10th line from below read Dr. Carl *Koller* instead of *Carson*.

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No. 7.

ON THE OPERATIVE TREATMENT OF ENTROPIUM.

BY JOHN GREEN, M. D., OF ST. LOUIS.

It is necessary to distinguish, at the outset, between two quite different conditions to which the name entropium is equally given, but which, nevertheless, have hardly more than a superficial likeness to each other. The former of these conditions, the so-called *E. spasticum* or *E. spasmodicum* of systematic writers¹, consists in the rolling inward of the entire lid-margin, generally the lower, and is the result of abnormal action of the orbicularis muscle, and notably of those bundles which lie nearest to the ciliary border—the so-called *musculus ciliaris* or *musculus Albini* of certain older writers. With *E. spasticum* may be classed also the *E. senile* of certain authors,² in which, besides the abnormal action of the orbicularis muscle, there is also relaxation or redundancy of the lid-integument. The other, and by far the most important type of entropium, is that which has been designated by the name *E. organicum*,³ in which pathological conditions are present in the tarsal conjunc-

1. Jüngken; Chelius; (acute entropium, Mackenzie; muscular entropium, DeWecker.)

2. Ibid.

3. Ibid. (Chronic entropium, Mackenzie; cicatricial entropium, DeWecker.)

tiva, in the tarsal tissue, and conspicuously in the lid-margin, where the posterior angle is often entirely effaced, even up to the line of the cilia, which thus appear to grow from the thin edge of the deformed eyelid and may be turned singly or in groups against the eyeball—*trichiasis*; in a distinct double row—*distichiasis*; or, in their totality—*entropium totale*.

Trichiasis or distichiasis is almost always met with in conjunction with some degree of entropium,¹ and is, therefore, to be considered rather as a complication of entropium than as a distinct affection.

Excluding cases of traumatic entropium, following wounds of the eyelid or burns of the conjunctiva, entropium, with its attendant trichiasis is generally a result of trachoma, and has, therefore, been appropriately discussed by Arlt in connection with his classical description of that disease.² The clinical study of trachoma, in its many phases and in its essentially chronic course, sustains fully the general correctness of Arlt's teachings as regards the part which trachoma plays in the development of organic entropium, namely, that the incurvation of the tarsal tissue, the effacement of the posterior angle of the lid-margin, and the misdirection of the cilia, are due in the main to one common cause, and that this cause is to be sought in the traction exerted upon the marginal tissues of the eyelid, as a result of strong contraction from cicatrization in the diseased conjunctiva and in the subjacent tarsal tissue. The several forms of misdirection of the eyelashes, whether trichiasis, distichiasis, or total entropium, are ordinarily but different phases of the effect produced by the same pathological process, and neither from the therapeutical nor from the etiological point of view do they require to be distinguished as special or separate types.

That there is often an element of spasm superadded to this principal cause of organic entropium is not to be doubted, but

1. Cf. Scarpa, Cap. IV. Himley, *Krankheiten und Missbildungen des menschlichen Auges*; I., S. 141. De Wecker, *Chirurgie Oculaire*, 21me leçon.

2. *Krankheiten des Auges*, I., S. 128.

the spasm of the orbicularis muscle plays, in most cases, only a secondary part, in maintaining and aggravating the evils which are primarily due to cicatricial contraction in the conjunctiva and tarsal tissue.

These views regarding the origin and causation of entropium and trichiasis are too familiar to admit of any claim to novelty in re-enunciating them; nevertheless, they are not so clearly stated in the text-books as they deserve to be, and through this lack of clear statement confused ideas are still quite prevalent, both with regard to the essential character of the affection and the principles upon which its rational treatment must be based.

The misdirected cilia, although the most conspicuous, are by no means the only source of irritation in entropium. In some cases the inversion of the lid-margin is so complete as to bring a marginal strip of the lid-integument into contact with the globe, and in a very large proportion of cases the posterior angle of the lid-margin is dragged towards and becomes confounded with the general conjunctival surface, so that the mouths of the Meibomian glands appear as if opening upon the conjunctival aspect of the eyelid and discharge their secretion against the eyeball. Both of these factors contribute to the sum of the irritation caused by the disease, and the effacement of the posterior angle of the lid-margin constitutes a very important part of the total deformity.

In the treatment of entropium, the attention is too often directed solely to the cure of its most prominent symptom, namely the trichiasis, and operative methods, almost without number, have been conceived and adopted to this single end. A palliative method, necessarily temporary in the relief which it affords, consists in the pulling out of the offending cilia by means of forceps, a procedure which should be strictly limited to the misdirected eyelashes, and which must be repeated as often as they grow again, generally at intervals of a few days and for a period to be measured only by years or even by the life of the patient. More difficult of execution and even more transient in its effect is the plan of curling the misdirected, eye-

lashes,¹ or bending them forward and attaching them to the normal cilia by means of some agglutinative substance.² Somewhat more lasting in its effect, but limited at the furthest to the remaining term of life of the eyelash, is the procedure of engaging a misdirected cilium in a loop of fine thread and drawing it by means of a needle through the tissues of the lid-margin so as to bring its point out in line with the normal cilia.³ (*ἀναξροχίσμιος*,—*illaqueatio*). More radical methods of treatment are the excision of a group of eyelashes and their bulbs, included in a bit of the lid-margin in its entire thickness,⁴ or contained in a strip of tissue bounded by two parallel incisions made in the lid-margin, the one behind and the other in front of the row of cilia to be removed,⁵ the destruction of the hair bulbs by burning their follicles with the hot iron⁶ or with the galvanic cautery,⁷ the destruction of the hair bulbs by puncturing their follicles and introducing escharotic or irritating substances,⁸ the destruction of the hair bulbs with their follicles by galvano-puncture,⁹ the formation of an eschar or eschars immediately in front of the misdirected cilia in the hope of drawing them forward into line with the normally directed eyelashes,¹⁰ and the application of a suture in the same situation and for the same purpose.¹¹ Other methods, more radical than these, and involving the sacrifice of the entire row of of-

1. Rhases.

2. Paulus Ægineta, Lib. VI. Cap. XIII.

3. Celsus, Lib. VII, Cap. VII; Paul. Ægin. Lib. VI, Cap. XIII.

4. Schreger.

5. Rainy, Vid. Mackenzie, ed. 1854, Chap. III., Sect. XXXIV, 7.

6. Celsus, VII, VII, 8; Paul. Ægin. VI, XIII; Rhases; A. Paré; Carion du Villards De Champesme, et al.

7. Middeldorpf, 1854; Stellwag v. Carion, Lehrbach, 1861.

8. Nitrate of silver; Middlemore, 1835. Tartar emetic; Mackenzie, ed. 1854, after James Hunter.

9. Carron du Villards, 1835.

10. By nitrate of silver, A. Jacob. By caustic potash, Mackenzie. By the Galvanic cautery, Samelsoln.

11. Gaillard, 1844.

fending eyelashes, are the splitting of the lid-margin and abscision of a narrow marginal strip in front of the tarsal tissue, including in it the skin, muscle, and row of cilia with their bulbs,¹ the laying bare of the bulbs of the cilia by an incision through the skin, and excising the bulbs either with² or without³ excising the strip of muscle overlying them, laying bare the row of hair bulbs as above and cauterizing them,⁴ excising a narrow strip of tissue parallel to the lid-margin, including skin, muscle and the row of hair bulbs,⁵ drawing a seton along the course of the row of hair bulbs and leaving it in situ until they have been destroyed by suppuration,⁶ and lastly, and worst of all, the abscision of the lid-margin in its entire thickness⁷ or the total destruction of the cilia-bearing tissues by the actual cautery⁸ or by deeply-acting caustics.⁹

Several of these methods may be dismissed with the judgment long ago rendered by Beer in the single word *Spielerei*, and certain others must be condemned as involving grave and inexcusable mutilation. Of the great number of methods which have been proposed for excising the cilia singly or in small groups, or for destroying their bulbs by some form of actual or potential cautery applied to their follicles, all are open to the very serious objection that tissue is sacrificed in the thickness of the lid-margin when it can least be spared, and where the subsequent cicatricial contraction tends strongly to the reproduction of the original trouble by drawing other cilia out of line to replace

1. Flarer, 1829.—An operation identical in effect but less perfectly elaborated had been previously advocated by Fr. Jaeger.

2. Vacca Berlinghieri, 1825.

3. Mackenzie.

4. By nitric acid. Vacca Berlinghieri. By caustic potash, Mackenzie.

5. Pétrequin, 1834.

6. Herzenstein; *Archiv für Ophthalmologie*, XII, I, 1866.

7. Tolerated, as a last resort, by Heister, 1739, but justly stigmatized by him as "a lamentable method."

8. Celsus, et al.

9. Albucasis, et al.

the misdirected hairs which have been removed or destroyed. Relapses from this cause are in fact the rule, and repetitions of the operation become necessary, resulting finally in a much more extensive destruction of the eyelashes than was intended, and in a correspondingly increased deformity of the lid-margin¹ through the formation of very numerous cicatrices. More rational, but of very limited application, are the several procedures for changing the direction of a single eyelash or small group of eyelashes by establishing a small contracting cicatrix in front of it, and for this purpose the stitch of Gaillard and the galvanic cautery as employed by Samelsohn² are perhaps the most convenient and effective agents. For the extirpation of the entire row of eyelashes by a single operation, the method of Vacca Berlinghieri, as originally described or as modified by Pétrequin, is to be preferred to that of Flarer, for the reason that it respects the integrity of the lid-margin, and tends also to the correction of the entropium through the contraction of the resulting cicatrix. Herzenstein's procedure, for destroying the hair bulbs by the suppuration excited by a seton, is much easier of execution, and, as regards the operation itself, is much less painful than the cutting operations: a convenient and useful modification of this method will be described later.

In estimating the value of even the best of the procedures which involve the extensive destruction of the eyelashes, it may be said that, as applied to the upper eyelid, in which the loss of the cilia constitutes the gravest mutilation, other and in all cases far better methods are available. In trichiasis of the lower lid, however, the case is somewhat different, both because

1. Cf. Beer; *Lehre von den Augenkrankheiten*, II, Sect. 104. Beer's well-considered judgment condemning the various procedures for cauterizing the follicles of the eyelashes as a cure for the ordinary forms of trichiasis, applies also to such newer methods as have been suggested since his time. Occasionally a case is seen in which the permanent removal of an eyelash or two may yield a perfectly satisfactory result, and those exceptional cases afford a legitimate, but necessarily limited field for the procedures in question. The choice of method is comparatively a matter of little importance.

2. *Archives of Ophthalmology and Otolaryngology*, III, II, 1874.

the mutilation from the loss of the eyelashes is much less serious than in the case of the upper lid, and also because when once the irritation from the misdirected cilia is effectually removed the inconvenience from the remaining deformation of the lid-margin is comparatively unimportant. It is also true that the operations for the cure of entropium which give the best results when performed upon the upper lid are often more or less unsatisfactory when performed upon the lower lid. All methods directed to the cure of trichiasis in the upper eyelid which leave the entropium uncorrected, yield, at the best, but partial and incomplete results; on the other hand, the operative cure of the entropium includes also the cure of the trichiasis, and, if successfully accomplished, leaves the eyelids free from mutilation and in the best possible condition for the future protection of the eye.

Many of the objections which have just been stated apply, with certain qualifications, to the well-known and still popular operation of Arlt,¹ for transplanting the cilia-bearing tissues comprised in the anterior half of the thickness of the split upper eyelid.² It consists essentially in the splitting of the lid-margin, to the depth of about three millimetres, along the line of the openings of the Meibomian glands, followed by the removal of a broad, crescent-shaped flap of skin from the front of the eyelid, and the transplantation upward of the cilia-bearing marginal strip by the aid of from three to five sutures. This operation, which has been very extensively adopted, and has been modified in some of its details by its author,³ and by von Graefe,⁴ DeWecker⁵ and others, is essentially an operation for trichiasis, and leaves the deformity of the lid-margin and the incurvation of the tarsal tissue uncorrected. Moreover, the long incision in the lid-margin, however widely it may be made to gape through the traction of the skin of the eye-lid, tends grad-

1. Commonly known as the Jaesche-Arlt operation.

2. Arlt, *Krankheiten des Auges*. 1850.

3. Graefe and Saemisch; *Handbuch*, II, III, 1874.

4. *Archiv für Ophthalmologie* X, II, 1864.

5. DeWecker, *Chirurgie Oculaire*, Paris, 1879.

ually to close again by cicatricial contraction, so that after the lapse of a year the trichiasis is often found to be reproduced, while the eyelid remains more or less conspicuously disfigured through the loss of a considerable portion of its integument. Thus the immediate effect of the operation, which is often brilliant, is apt to become less and less satisfactory with the lapse of time, until in the end the condition of the patient may prove to have been but little if at all ameliorated.

[TO BE CONTINUED.]

A TRANSVERSE SCOOP FOR THE REMOVAL OF FOREIGN BODIES FROM THE CORNEA.

BY A. SCHAPRINGER, M. D., NEW YORK.

The accompanying illustrations represent a transverse scoop, for the removal of foreign bodies from the cornea, as made for me by Mr. F. Eissner, manufacturer of surgical instruments, 18 Third Ave. (Bible House), New York.

One of the illustrations represents the scoop in its actual size, whilst the other gives an enlarged view.



Fig. 8.

This transverse scoop will be found to be more advantageous than the straight instrument in a great many cases, from the fact that it enables the operator to attack the foreign body from two opposite directions without changing the position of the hand. It is worked by a twist of the fingers and scraping of the corneal epithelium is thereby avoided.

THE IRICYSTOME.

BY H. CULBERTSON, M. D., ZANESVILLE, OHIO.Assistant Surgeon U. S. Army. Retired.

I have been several years in perfecting this instrument and now venture to submit it to the profession. The name "Iricystome," is from iris (*iridos*), cyst (*kyst*), sac, and (*temno*), to cut, meaning an instrument to cut the iris and lens-capsule. The object of this instrument is therefore to cut out a triangular portion of the iris and lens-capsule, or of either, and thus form an artificial pupil in a certain class of eye cases.

The following is the description of the instrument. Fig. 9, No. 4 is a general view. It will be seen that we have employed the principle of Sands' Needle-holder; the blades of which at "b," are flattened and spring apart when at rest, and are limited in their separation by the stop-nut "a." The front blade is solid, the back-blade, a little larger, and fenestrated so as to cut out an equilateral triangle of the included membrane, each side of which is four (4) millimetres in length. But the side of this triangle at the base (transverse) does not cut. Hence an incision is needed, of the iris, or capsule, or both, before using the instrument, that the included portion may be cut clearly. This is illustrated by Fig. 9, No. 2, where the instrument is shown cutting up to the margin only of a thin portion of paper, and a section is seen removed in the same figure. At Fig. 9, No. 3, is shown the preliminary incision, made with a narrow iris knife, through the cornea, iris, and capsule, extending from margin to margin of cornea, at about one-fourth of the diameter of the cornea from the lower or upper corneal margin. This incision is vertical to the plane of the iris—it is the chord of the arc, and the circumference of the cornea, is not divided. It is made at any point (demanded) of the corneal area, above, below or externally. When this incision has been completed, the point of the instrument is introduced through the corneal wound, the blades are closed, and pushed gently and steadily

onward up to the divided membrane or iris, the blades are now opened and pushed inward (one blade behind, the other in front of the capsule, or iris, or both), until the base line of the instrument "e," Fig. 9, No. 4, is at the line of the incision of the iris and capsule, as shown in Fig. 9, No. 3. The blades are then closed, the portion is cut out and the instrument is withdrawn from the eye still

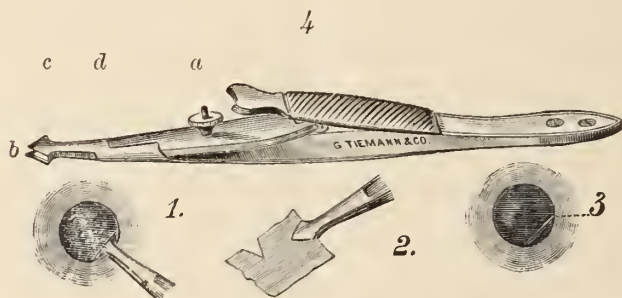


Fig. 9.

closed, and retaining the excised portion. Of course, the cornea is not incised by the instrument. Fig. 9, No. 1 illustrates the position of the instrument when introduced into the eye and about to cut out the included membrane. The blades at the base of their cutting portion are one and a half millimetres thick when closed, and the outside measurement across the base of the blades at "e," Fig. 9, No. 4, of the posterior blade, is six (6) millimetres. The distance from "c" to "d," Fig. 9, No. 4, is 10 millimetres.

I have used this instrument in several cases with success, one of which is reported as follows:

August 9, 1883. H. T. W.—, æt. 8 years, was brought to me by his mother, presenting a gun-eap wound of the cornea, iris and lens of the left eye, incurred several months before. The pupil was closed and there was synechia posterior. I hoped that the foreign body would be found in the lens, which was cataractous. The wound being in the inferior region of the cornea, after chloroforming (August 9, 1883), I did an inferior section

of the cornea, an iridectomy, and scooped out the pasty cataract, after incising the capsule, but failed to find the portion of cap. But slight reaction followed this operation, but the opening in the capsule closed and the iris was adherent to it. To obtain an opening in this capsule, after chloroforming on September 6, 1884, I incised the cornea, remains of iris and capsule transversely, at about two lines above the lower corneal margin, entering the narrow knife perpendicularly at the corneal margin, passing the point through the several structures named, and behind the capsule, depressing the handle of the instrument and counter-puncturing at the inner corneal margin, opposite the entrance point. Introducing the points of the blade of my "Iricystome" closed, through the corneal wound, and reaching the margin of the cut in the capsule, I now opened the blades, and introduced them further into the anterior and posterior chambers, one blade behind, the other in front of the capsule, until the line of the cut in the capsule corresponded with the base line ("c," Fig. 9, No. 4.) of the instrument. Then closing the blades, a portion of capsule, one millimetre in size and triangular in form, was cut out and held in the instrument, which was then removed. As there was some blood in the anterior chamber, I washed it out with warm distilled water, using a clean hypodermic syringe with a smooth blunt point. The patient vomited from the secondary effects of the anæsthetic, which caused some bleeding into the anterior chamber. Bandage and dry dressing applied.

September 7.—Some pain in eye, for which he was given Croton chloral, hydrate of chloral and morphine, in appropriate doses, which controlled the pain. Ice compresses were applied, to-day, and for three days. After the third day the case required no treatment save rest in bed and a dark room. The corneal wound healed and the artificial pupil remained open. He could see large objects when I last saw him and the eye was free from tenderness. I shall test his vision when I have an opportunity.

This instrument is made by Messrs. Geo. Tiemann & Co., 67 Chatham St., New York City.

CLINICAL OBSERVATIONS.

BY DR. D. COGGIN, SALEM, MASS.

Glioma of the Retina.—November 16, 1881, Chas. B., æt. 2 years; of New England stock, was brought to me by his mother who three months before had first noticed a "white spot" within his left eye.

The child was unable to walk, had always been weak; head large. The affected eye was of normal shape and size. No external redness. Pupil and T n. A white mass plainly visible just within and below the pupil.

On curing the right eye, the little patient grasped at objects and saw to seize a pin from the table. Atropine was used and an ophthalmoscopic examination was made, though under difficulties, owing to constant movements of the child. Media clear and fundus normal. At the inner side of the eye and mostly below the equator, was an almost pure white flocculent mass, becoming more dense at its rather wide place of attachment, floating in the vitreous and tumbling with the movements of the eye. This motion was readily observed without the mirror. No vessels coursed over the tumor. There had been no symptoms of pain. Right eye normal, apparently. Healthy parentage. (A year later I was told the boy's paternal grandmother died at 38 and there were cancer deposits in her liver.)

January 6, 1882, seven weeks later, photophobia on throwing light into the affected eye. Numerous small, round, white deposits made out in the fundus as the eye moved; their seat not determined. Appearance of tumor unchanged. No redness or tenderness. Of late child has cried much and pressed head between hands as if it ached.

A spasm a week ago. Has sixteen teeth. Mother says child is "backward in every way."

Bowels habitually relaxed. Grasps at objects still.

April 12.—Child never so well. Tumor unaltered. Vitreous turbid and opaque bodies floating in it. No view of fundus. No pain or redness. T n.

July 7.—A week ago struck the sound eye with a stick

and the left one became red and there was a good deal of photophobia, so I was told. Pupil now dilated. Hypopyon not excessive. T + 1 (?). No V. Sclera thinned, showing pigment through it. O. S. diverges. Child too restless to allow an examination of O. D.

August 23.—The effected eye been red one week. Much photophobia. Has cried and kept hand on eye. Pupil widely dilated. Globe has the appearance of being enlarged. Enucleation urgently advised.

August 29.—Some pain last night. Eye removed. Its protrusion through the palpebral aperture difficult, owing to its size.

October 5.—Mother said the child was ill three weeks before. Avoided the light. Now well. I was unable to examine the socket of the enucleated eye.

November 22.—Mother came from her home (four miles out) alone. Child too feeble to be brought. Has been ill a month. Screams with pain to head. Left lids much swollen.

December 13 (28 months since the growth was first seen), child died. Kept under ether by the medical attendant to relieve suffering. The disease had appeared in the orbit and protruded through the lids and frequent hemorrhage had occurred. Child conscious till twenty-four hours before death.

The growth proved to be glioma of the retina. It had extended to the optic nerve, in which glioma cells were found.

Suppuration in the Vitreous.—June 2, 1883. I saw in consultation in the country, Mrs. S., age 27 years, born in Massachusetts. No eye trouble till recently, when a tumor (doubtless a chalazion) appeared on the right upper lid. This was dissected out five days before my visit, without ether, and by button-holding the cartilage, so her physician who removed the tumor told me. Forty-eight hours after the operation the eye became red and painful.

The pain was so acute that anodynes were called for. Patient of full habit and perhaps hysterical, as shown by retention of urine on a day of rest. Acne of face. Bowels constipated. Weak from effect of recent enema. Eyes closed. Wound of lid not united. Considerable photophobia. Deep conjunctival

congestion with chemosis. Some swelling of lower lid. Pupil fully dilated by the atropia that had been used. Cornea unaffected. No tenderness on applying pressure. Tension normal. Counts fingers at 0.30. Sight has always been excellent. No view of fundus. Immediately behind the lens a dark, wooly mass was seen, its outline being indistinct against the red reflex from the fundus owing to the turbidity of the vitreous. Because of the dread of light, and the want of a good light patient being in bed, the view was not satisfactory.

Leeches were ordered and ice. The latter was applied constantly for thirty-six hours. I heard from the patient daily by telephone and her medical attendant said she was free from pain. After a few days I ceased being informed about the case. Two months later Mrs. S. entered the Salem Hospital. She stated that some days after I visited her, pus came out of the eye through an opening over the "sight" but that she had not suffered as she had at first. The eye was nearly free from redness. There was a staphyloma of the cornea below, nearly transparent but with a vertical cicatrix at the centre about two mm. in length. Its size and form (the staphyloma) led me to believe the lens in the capsule must be within the anterior chamber, but this idea was abandoned on holding a + glass before the eye as it lessened the sight, which amounted to the counting of fingers at 0.15.

The pupil was normal, no adhesion of the iris. A granular mass extended from the button-hole made in the cartilage, when the tumor was removed, to the ciliary margin, which was snipped off. On the 29th an iridectomy was done upward. On being discharged twelve days later vision had doubled. Six months after with a—D4. glass it was $\frac{6}{1X}$ and the patient could slowly read Sn. at 0.20.

No increase of the corneal staphyloma, iris acts normal. Fundus readily seen. No trace discovered of the remains of trouble in the vitreous save a dark body, 1 mm or so in diameter, near the lower border of the lens.

The loss of substance from the lid at time of the first operation must have been considerable as eversion of the upper lid was well nigh impossible and the skin was retracted by the cicatrix.

A Case of Intra-Ocular Tumor Simulating Glaucoma.

Margaret Murphy, age 35, born in Ireland. a housewife, sought treatment at the Salem Hospital on the 11th of August, 1880, because of severe pain in her left eye (worse at night) for five days. The sight had been failing for four years. Anterior ciliary vessels congested, anterior chamber shallow, pupil widely dilated, greenish reflex, tension greatly increased.

No perception of light. No view of fundus with the ophthalmoscope, nor was any tumor found. Eserine exerted no influence on the iris but, as the woman was averse to an operation, some of the solution was given her and she went home. Ten days later she returned complaining of intense pain in her eye and brow and consented to have an iridectomy performed, which was done the iris being much attenuated.

Immediate relief followed the operation and for two days there was no pain, so the patient stated on returning to the Hospital August 31. Was unable to sleep because of extreme pain in her eye and could not retain food. Enucleation done at once. Last June the woman came to the Hospital and stated she had suffered no further trouble. Sight in the remaining eye = $\frac{6}{6}$.

The tumor was a small fusiform-cell sarcoma.

A CASE OF PERMANENT ZONULAR SCOTOMA OF
TRAUMATIC ORIGIN—VERY SMALL CIRCLE
OF CENTRAL FIELD WITH
VISION NORMAL.

BY O. F. WADSWORTH, M. D., BOSTON.

Mr. C., aged 26, a civil engineer by profession, on Aug. 21, 1871, drove a span of horses attached to a wagon weighing about a ton, and loaded with 12 tons of lumber into a plowed field. He was seated on the foot board of the wagon, his feet resting on the pole. One of the four wheels sank into a furrow, the

wagon lurched, his feet slipped from the pole, and he fell to the ground. As he fell he struck the flank of the rear horse. The horse turned sharply to the right, and the left fore wheel passed over his body. The sudden turn carried the off horse upon a pile of fence posts, brought the off fore wheel against the posts and stopped the team. The left hind wheel rested on the inner side of his left knee, pressing it into the soft ground and requiring the wagon to be backed to release him. He is not certain just how or where the fore wheel crossed his body, but, judging from the lameness afterward, believes it struck the lower part of his chest from behind and passed over it while he lay on his left side.

The next day there was much general lameness and a bruised feeling under the chin, as though he had received a blow there. He also observed that he could not see in the center of the field of the right eye, "as there was a mist before it." There was, however, nothing to be seen externally about the eye, and no sensation of bruising on or about it. During this day and the next he used his eyes considerably, writing till 11 o'clock on the evening of the 23rd, and noticed no change in the condition of the right eye.

On Aug. 24, the third day after the injury, he applied to me. There was still much general lameness and stiffness. The eyes were externally normal. L. E. $V = \frac{14}{x}$, fundus normal, R. E. $V < \frac{14}{cc}$, no contraction of field, no definite boundary of scotoma made out. The disc a little indistinct, slightly reddened; the retina in all directions about the disc somewhat opaque, but rather reddened than pale, except in the region of the macula, where it was whitish and the vessels stood out more sharply than normal against the light background. Scattered about were a number of rounded hemorrhages, the largest half the diameter of the disc in size, all quite thin and some already partly or wholly decolorized; in the macula numerous minute hemorrhages of irregular shape. The arteries of normal size and course; the veins slightly enlarged; well marked (normal) pulsation in the main vein at the central depression. Periphery of normal appearance. Ordered atropia, blue glasses, rest.

August 26. Appearance of retina slightly improved. No boundary of scotoma made out. $V_{LXX} = \frac{14}{x}$, but sees only one letter

at a time and as if looking through a small opening in a diaphragm.

Aug. 28. Retina somewhat clearer; hemorrhages absorbing; veins still enlarged, V $\frac{14}{L}$, one letter at a time as before.

Sept. 5. Retina clearer, hemorrhages mostly absorbed; V $\frac{14}{XL}$ — $\frac{14}{XXX}$.

Sept. 25. Except for traces of one or two hemorrhages the fundus perfectly normal in appearance; V. R. with + 60 = $\frac{14}{X}$ —L. = $\frac{14}{X}$.

Oct. 28. Nothing abnormal to be seen. He makes out most of the letters of X at 14' with R., but slowly; even much larger letters are read only slowly; they are seen as through a small opening in a diaphragm. The periphery of the field and periphere vision normal, and no defined boundary of the defect which surrounds the center of field made out. A. normal. No lameness nor other effect of accident perceived.

April 9, 1877, V. R. or L., $\frac{14}{X}$. Still sees with R. "as through a small opening in ground glass." The scotoma appears as a zone widest toward the right, both the central and the peripheral parts of the field seeming as clear as of the left eye. At a distance of 13' the central clear field is only 2" in diameter. At the same distance the outer limits of the scotoma from the fixation point are upward 7"; up and out 10"; out 10"; out and down 8"; down 6½"; down and in 4½"; in 5"; in and up 6". This boundary is pretty sharply defined to the outer sides and downward, while above and especially to the inner side it shades off. Careful examination of the fundus reveals nothing abnormal.

Dec. 21, 1878. The past year Mr. C. has been employed in Texas as constructing engineer of a railroad. He is conscious of no change in the condition of the right eye. The scotoma makes it necessary to use the left eye with theodolite, etc.; V. R. $\frac{14}{X}$, At 15' he sees only three letters of 15 at once, and the outer edges of the extreme letters are even a little blurred. At 13' the outer border of the scotoma, measured on the blackboard by the disappearance of a piece of chalk, is up 8"; up and out 9": out 9½"; out and down 8"; down 7"; down and in 7"; in 6½"; in and up 7". In all directions around the scotoma, however, an object is seen more distinctly a few inches from the border as

above given than in its immediate neighborhood. The outer boundary of the field and peripheral V normal. The fundus quite normal everywhere.

I have had no farther opportunity to examine the eye, but have heard from time to time that its condition is unchanged.

JEQUIRITY AND SOME OF ITS ILL EFFECTS.

BY CHARLES J. LUNDY, A. M., M. D.

PROFESSOR OF DISEASES OF THE EYE, EAR AND THROAT IN THE
MICHIGAN COLLEGE OF MEDICINE.

Although jequirity has been before the profession for nearly two years, and although it has been extensively used in ophthalmic practice by a large number of observers, we find that various opinions are held regarding it. Ophthalmic surgeons by no means agree in regard to its therapeutic value, while many regard it as a very dangerous remedy, potent for evil if not for good.

Used in the same manner, of the same strength, in the same class of cases, and under the same general circumstances, if the article be good, the same general results should be had.

Nevertheless, we find, according to their own statements, that some physicians have only the most brilliant results, for they make no mention of failures or of ill effects, while others (probably the more conscientious) frequently meet with disaster.

It is only by an interchange of honest opinion, as well as by experiment, that we can gain a correct knowledge regarding the value of jequirity or its lack of value. In our statements regarding it, we should be as willing to relate the evil results following its use as to give glowing accounts of our successes.

It is not my intention at the present time to give my experience in general with jequirity, and my remarks will be mainly confined to a report of a few of the many cases in which I have used the remedy.

CASE I.—MISS B., æt. 16, of Leamington, Ont., came to consult me on July 18, 1883. She had had “sore eyes” for more than two years. On examination it was found that she had granular ophthalmia (trachoma) with atrophic changes in the conjunctiva; and there were also small superficial ulcers of both cornea and slight pannus in the left eye. There was a small quantity of muco-purulent discharge. Astringents were applied daily, with atropine and an ointment of yellow oxide of mercury. Improvement was rapid, and in a few weeks the right eye was well, but there still remained a very slight vascularity of the cornea and some small granulations in the left eye. The superficial ulcers had entirely healed, and no opacities remained. Vision in the right eye = $\frac{20}{xx}$ and in the left = $\frac{20}{xxx}$. An infusion of jequirity, about one per cent., was used in the left eye. It was brushed over the everted lids twice daily and the eyes were bathed with the infusion several times a day. In twenty-four hours reaction slight. Some serous discharge.

Second Day—Discharge more profuse with admixture of some muco-pus; lids swollen, red and tender; conjunctiva covered here and there with small white deposits.

Third Day—All the symptoms aggravated. Conjunctiva covered with membranous deposit, which is easily removed; lids more swollen and more tender to touch; discharge quite profuse.

Fourth Day—Remedy discontinued. Patient complains of feeling ill. Pain in eyes, temple and forehead prevented sleep last night. Pulse rapid, skin hot and dry; temperature not taken. Lids enormously swollen and extremely tender to touch; swelling extends down the side of the face, lymphatic glands of neck on that side also swollen. On account of the great swelling and tenderness of the lids, no satisfactory view of the cornea could be obtained, but ocular conjunctiva was much swollen and chemosed. The discharge of sero-purulent matter very profuse. Patient was much depressed both on account of suffering and fear that the eye would become blind, and in this fear I participated. Ordered cold compresses, atropia and boracic acid lotions and anodynes to allay pain.

Fifth Day—Condition slightly improved, but no material change.

Sixth Day—Croupous deposit disappearing from conjunctiva, lids less swollen, discharge less free. Cornea now examined and found to be very hazy, and in places (especially upper half) much infiltrated; corneal epithelium extensively macerated and softened, and several small corneal ulcers present. From this time improvement went on rapidly, and in two to three weeks all inflammatory symptoms had subsided. The granulations were gone, the corneal ulcers had healed and the vascularity of the cornea had disappeared, but there still remained opacity of the cornea. Fortunately this opacity was mainly in the upper portion of the cornea and some useful vision remained. Vision in R. E., as before, = $\frac{20}{x x}$; in L. E., = $\frac{20}{c}$. She was ordered an ointment of yellow oxide of mercury to be used daily and was dismissed. Through her brother I have since learned that vision has improved.

According to *De Wecker* this was a case in which the use of jequirity was specially indicated. There was a dry conjunctiva, no discharge, and vascularity (*very slight*) of the cornea. But the result was bad, and came near being disastrous.

CASE II.—John C., æt. 41, of Kingsville, Ont., came to consult me September 10, 1883. He had had granular ophthalmia for about one year. The granulations were large and prominent and the conjunctiva slightly atrophied. There was but little discharge. Slight vascularity in upper portion of both corneae. Vision = $\frac{20}{x x x}$ —in each eye. Applications of a freshly prepared infusion of jequirity, about one per cent., were made three times daily for three days.

In twenty-four hours, lids slightly swollen, and some discharge of watery serum. In forty-eight hours lids more swollen and tender to touch; free discharge of serum with muco-pus; some white deposit on conjunctiva of both lids; ocular conjunctiva also swollen. In seventy-two hours lids greatly swollen, red and tender, swelling extends down upon the cheek; pain in eyes, brows and temple prevented sleep; conjunctiva covered with croupous membrane; ocular conjunctiva chemosed; cornea very hazy, and corneal epithelium macerated and softened, and several corneal ulcers; discharge profuse. Instilled atropine and ordered boracic acid lotions and cold compresses, also anodyne

to relieve pain. Next day, patient feels a little easier; eye looks much the same, except that the membrane is disappearing at some points.

From this time on patient improved daily, and in two weeks "jequiritic inflammation" had subsided. Conditions two weeks after use of jequirity: Vascularity of cornea a little greater than before the use of the remedy; and granulations about the same, slight opacities in cornea and vision $\frac{2}{L}$. Astringents, either argentum nitrate or the cupric sulphate, were now applied daily and the case progressed favorably, and in a few weeks the patient was sent home in good condition, but not perfectly cured of his granulations, which, however, have given him no trouble since.

On the same day that Mr. C. came to consult me, his friend and neighbor, Mr. McD. also came. He, too, had granular lids. The conditions were similar to those present in Mr. C.'s eyes. Mc D. was treated with astringents and made a more rapid, and also a better, recovery than did Mr. C., and left for his home with vision fully $\frac{2}{XX}$, without having been subject to great torture or having run the risk of losing his sight by jequirity.

CASE III.—Herman R., æt. 59, consulted me October 22, 1883. "Had sore eyes with some discharge for more than two years." The lids were puffy and the conjunctiva greatly thickened and infiltrated with masses of granulations. In places, this gave the appearance of compressed "frog-spawn." The conjunctiva of lower lid and the fornix were especially crowded with this deposit. There was dense pannus in both eyes. Vision scarcely more than perception of light. A freshly prepared infusion of jequirity was brushed over the lids twice a day, and some of the infusion was dropped into the eye two or three times a day for two days. In forty-eight hours the lids were much swollen, red and tender; the conjunctiva was partially covered with a membranous deposit; free discharge of sero-mucus with some pus.

Next day, lids more swollen and œdematous, very painful and tender; pain extends to brows and temple; conjunctiva, so far as it could be inspected, covered with membranous deposit, which,

however, can be easily removed; discharge of sero-purulent matter quite profuse. Ordered cold compresses and instilled atropia and boracic acid. Swelling and inflammation gradually subsided and in about two weeks the effect of the jequiritic ophthalmia had disappeared.

Results: Pannus not quite so dense as before its use; the granular mass much diminished in places, but conjunctiva much scarred. Large bands of cicatricial tissue were left in the conjunctiva. This condition was especially noticeable in the lower lids, where a broad ridge-like, dense cicatrix reached nearly across the whole length of each lower lid. These still remain. It may be stated here, that jequirity was used at three different periods thereafter, at intervals of a couple of months, but very slight reaction followed its employment. Much improvement took place in the pannus, but on the whole the improvement from the use of jequirity was slight when compared with that due to the use of other remedies. The conjunctiva is now quite smooth, except for the ridge-like scars, and the cornea is no longer vascular, and vision = $\frac{20}{LXX}$. Had the ordinary modes of treatment been faithfully carried out in this case, I am confident the result would have been fully as good, so far as the pannus and granulations are concerned, and there would not remain, as now, permanent cicatrices of the conjunctiva, which must ever prove a source of irritation to the eye and discomfort to the patient.

CASE IV.—Thos. M., æt. 39, of Flint, Michigan, came to consult me April 8, 1884. His eyes had been inflamed for about one year and a half. This proved to be a case of mixed granulations, rather than one of pure trachoma as in the preceding one. The conjunctiva was swollen and succulent, and there was some discharge of muco-pus. The corneæ were clear, but in the left eye there was traumatic cataract, and the right eye was slightly myopic. To the everted lids astringents were daily applied for some time. At first the improvement was rapid, but after a time the astringents failed to produce satisfactory results. However, the granulations were greatly reduced by their use and the discharge ceased. Jequirity was now employed. A three per cent. infusion was made by macerating the decorticated

beans pulverized for three hours in cold water. This infusion was brushed *only once* upon the conjunctiva of the everted lids. In twenty-four hours the lids were much swollen and œdematous, the conjunctiva was much swollen and somewhat chemosed, and was covered with a thin film of lymph. Next day the discharge of sero-purulent matter was very profuse, the lids were greatly swollen, red and painful and the conjunctiva was covered with a thin membranous deposit. Third day conditions somewhat aggravated. The chemosis and swelling of conjunctiva very marked; the cornea very hazy, and, in places, much infiltrated; the corneal epithelium was absent in at least six places in each cornea, and in the left cornea there was quite a deep ulcer. The discharge still profuse and the pain in and about the eyes very distressing. On the fourth day the membranous deposit had mostly disappeared and the general symptoms were moderating. From this time on the case improved daily, the corneæ were still a little cloudy, and the granulations were not at all diminished or in any other way helped by the treatment. However, the case now responded more readily to the use of astringents and in a few weeks he was discharged cured with the exception of a slight haziness of the corneæ.

What, let me ask, would have been the result in this case, had several applications of jequirity been made? I think all fair-minded men will say, the eyes would, in all probability, have been lost. And yet we had here a dry conjunctiva and no discharge.

CASE V.—Mrs. Johnson of Southfield, Michigan, consulted me August 19. More than two years ago she had been treated and cured of granular lids in one eye by Prof. Geo. E. Frothingham, and she now came to consult me regarding the other eye. There is tolerably dense pannus, and there are large granulations with slight atrophic changes in conjunctiva, and slight mucopurulent discharge. Disease of one year's standing. She was treated with astringents and sulphate of atropia, under which the granulations rapidly diminished and the pannus also improved. In an evil hour a single application of jequirity infusion, two per cent., was made to the everted lids in the hope that the pannus might more rapidly disappear. The reaction

was quite marked, and the patient's suffering was very great, and, naturally enough, she complained bitterly of the severe treatment. The jequiritic inflammation reached its height in sixty hours after the application, at which time the lids were greatly swollen, the upper lid hanging down over the lower one; the conjunctiva was covered with a croupous membrane, greatly swollen and chemosed; the cornea was cloudy and denuded of its epithelium at several points. When the patient left for her home, she was, in every respect, infinitely worse than when she first applied for treatment. She has not since returned, and I have learned nothing regarding her condition.

These are some of the untoward results which I have had from the use of jequirity, although I have usually been cautious in its employment. In case I the remedy was used for four days, but experience taught me it was too long. In case II it was used for three days and not so frequently applied, and yet the resulting inflammation was very severe and the results bad. In case III it was used for only two days and yet the result was great cicatrices of the conjunctiva. In case IV a single application was made, and with the intention of repeating it next day, did not the severe reaction deter me from its further use in that case. In case V a weaker preparation, two per cent., of the infusion was employed only once, but the result was very unsatisfactory to both my patient and myself. She has not returned for further treatment, and I would not do so either had I been in her stead. It is to be hoped no permanent injury has been done her eye, by the use of this dangerous drug.

THE TREATMENT OF WOUNDS OF THE SCLEROTIC BY SUTURES THROUGH THE CONJUNCTIVA.

BY THOS. A. JOYE, M. D., BROOKLYN, N. Y.

CASE I.—Mary R., æt. 13, presented herself at Dr. Prout's clinic at the Brooklyn Eye and Ear Hospital, December 6, 1882, and stated that while on her way to school the previous

day a piece of crockery thrown from a window struck her in the right eye. Examination showed an incised wound of the sclera and cornea downward and outward, about one-half an inch in length, involving the superior segment of the cornea. Ball soft and reduced in size. Vitreous presented through the scleral wound. Iris prolapsed. Anterior chamber filled with blood, V = perception of light. *Schoeler's* operation was decided upon, more with a view of preserving the globe and retaining the size and shape of the orbit, than with the hope of obtaining a useful eye. It was decided to forego the risk of sympathetic trouble by practicing conservative surgery. The ocular conjunctiva was dissected from the underlying tissue about the seat of wound for about 6 m. m., and a number of double sutures (silk) were passed through the *free border* of the *under flap*, which in turn were passed through the *base* of the *upper flap*. Then the *free border* of the *upper flap* was stitched to the *base* of the *under flap*, thus, bringing the scleral edges in direct opposition and covering the wound with a double layer of the conjunctiva. The prolapsed iris which had engaged in the corneal wound was cut off. Atropine solution instilled and bandage applied with slight pressure.

December 7. Eye looks well. No pain. Slight chemosis. Atropine and bandage continued.

December 10. Chemosis increasing. No pain. One of the sutures came away, while bathing the eye. Treatment the same.

December 11. Chemois less. All but one of the sutures were removed. Blood in the anterior chamber is rapidly being absorbed. Mask substituted for bandage. Atropine continued.

December 13. Hyphaema entirely disappeared. Conjunctiva slightly congested. Wound healed V = fingers at 2 feet.

In this case the lens and ciliary body must have been injured, though no record was made at the time. I have recently heard through a relative of the patient that she has had no trouble in either eye, and that her vision in the injured eye has improved very much.

CASE II.—Thomas E., æt. 42, called at the Brooklyn Eye and Ear Hospital during Dr. Prout's clinic, March 4, 1884, and

stated that some hours before he had been struck in the right eye with a pair of scissors. On examination it was found that the blade of the scissors had passed through the upper lid, cutting through the sclerotic at its upper and inner quadrant, and penetrating the ball well back of the ciliary region. Ball soft and much reduced in size. A quantity of vitreous had escaped, and some still presented through the wound. V = perception of light. In consequence of the hemorrhage in the vitreous, the fundus could not be seen. The presenting vitreous was cut off with scissors. *Schoeler's* operation performed, and a bandage applied with slight pressure.

March 5. Slept well during the night. No pain. Conjunctiva is congested and swollen. Bandage continued with warm fomentations.

March 6. Swelling less marked. Some chemosis. No pain. Treatment continued.

March 8. Swelling and chemosis disappearing. Sutures removed. Conjunctival flaps have firmly united. V = objects.

March 10. Eye painful, chemosis continues, conjunctival flaps slightly raised. Heurteloup applied and Pill. Cathart. Comp. No. 3 ordered.

March 14. Inflammatory symptoms have entirely subsided. Wound well healed. The opacity in the vitreous prevents any reflex from fundus. V = objects.

May 1. Patient states to-day, that he has noticed a gradual improvement of vision since the last visit. The eye looks well and has caused no discomfort. Ophthalmoscopic examination shows a clearing up of the vitreous. The opacities are arranged in horizontal layers, through the interstices of which the fundus can be seen V = $\frac{10}{15}$.

The advantage of *Schoeler's* operation over that of sewing directly through the sclerotic as is usually advised in the textbooks, will, I think at once be apparent. In gaping wounds of the sclera there is always an escape of vitreous and the amount lost is a very important factor in the prognosis. The force necessary to penetrate the sclerotic with a needle is considerable, and it can hardly be done without an additional loss of vitreous, which must certainly lessen the chances of a favorable recovery.

Again, the damage done the retina and choroid by the effort to pass the needle through the sclera, might reasonably be held to account in part for the retino-choroidal lesions upon such injuries. *Schoeler* reports ten cases in which he has performed this operation, and in no instance has retinitis or sympathetic trouble been noted. In the October number of the *Ophthalmic Review*, *Snell* reports four cases of wounds of the sclera which were successfully treated by sutures through the conjunctiva: "A needle threaded with fine gut is passed well under the divided conjunctiva on either side of the scleral wound and then tied tightly." This method seems more simple than *Schoeler's* and should be preferred, if the results are equal.

ATROPHY OF BOTH OPTIC NERVES AS A SEQUEL OF WHOOPING COUGH.

BY PETER A. CALLAN, M. D.

Surgeon New York Eye and Ear Infirmary.

Kate M.—, æt. 11. Patient undersized and not strong for her years. When six years old, had a very severe attack of whooping cough, lasting three months. Patient was very much reduced by the severe whoops and her mother despaired of her recovery, she was at times so prostrated. At the expiration of the third month of the disease the whoops suddenly ceased, but a very dangerous complication arose, viz.: brain trouble. Patient on attempting to walk would become dizzy and stagger—complaining of severe headache and pains in the joints and all over the limbs. Mind wandered at times—was obliged to remain in bed for three weeks and at the end of that time her headache and dizziness left her, but she could only see very imperfectly. The mother, who is not a very intelligent person, noticed that the child in walking would run against tables and chairs, showing plainly that she did not see well. The patient

was examined by a very competent ocalist, who told the mother that the eye nerves were swollen—optic nerves. For some months there was improvement in the girl's sight, but this failed her again. At the present time there is well marked white atrophy of both discs—with Vision O. D. = Movement of hand held before the face—O. S. counts fingers at eight feet.

Here we have a case in which a long continued attack of whooping cough brought about a passive congestion of the brain with œdema—this led to choked discs and subsequently to atrophy. As to the sudden cessation of the whoops, may that not be explained by the fact that the bronchial irritation was not enough to arouse the sensitive fibres of the *vagus* when the œdema took place.

CORRESPONDENCE.

COLDWATER, MICH., July 14, 1884.

Editor American Journal of Ophthalmology.—In the July number of your journal, Dr. C. J. Kipp records a case of spontaneous expulsion of a foreign body from the eye, and says that instances of this kind must be very rare, as he finds the record of but one similar case, and in a note by yourself, another case is given. Had I supposed that such cases were so rare, I should have reported before this, one case which came under my own observation in March last.

The case briefly was this. In May 1860 Wm. Tompkins, a farmer, took a span of horses to the field, their heads being fastened near together with a strap with a three quarter of an inch buckle on it. The team in some way broke this strap and as it flew back, it struck him on the eye and ruptured it.

After being confined to his room about six months from the date of the injury to the eye, he commenced working on his farm again, and continued to do so since. In March last he came to consult me, stating that something in the eye was chafing and irritating the lids. I examined it and found a small

black point, hard and a little rough, projecting from the eye. I grasped it with a pair of forceps and drew from the eye a piece of iron buckle three fourths of an inch long and about one sixteenth of an inch in diameter.

This foreign body had been in the eye twenty three years and ten months, and at no time had the other eye shown any signs of sympathetic inflammation.

S. H. CLIZBE.

The following statement was received from Drs. N. S. Davis, Chicago, and E. A. Jacobi, New York.

STATEMENT RELATING TO THE INTERNATIONAL COLLECTIVE INVESTIGATION OF DISEASE PROPOSED AT THE INTERNATIONAL MEDICAL CONGRESS AT COPENHAGEN.—The general meeting of the International Medical Congress, held at Copenhagen, on August 14, 1884, upon propositions made by Sir James Paget, Professor Ewald of Berlin, Professor Bouchard of Paris, and Dr. Billings of Washington, passed the following resolutions:

1. That an International Committee be formed for the Collective Investigation of Disease, in connection with the work of the International Medical Congress.
2. That the following gentlemen do represent their respective countries thereon:

As Representatives of Denmark.—Professors Trier, and C. Lange, of Copenhagen.

As Representative of Scandinavia.—Dr. E. Bull, of Christiania.

As Representatives of Russia.—Dr. Rauehfuss, of St. Petersburg.

As Representatives of Germany.—Professors Ewald and Bernhardt, of Berlin.

As Representatives of Austria-Hungary.—Professor Schnitzler, of Vienna; and Professor Pribram, of Prague. To whom was added by co-optation.—Professor Korányi, of Buda-Pest.

As Representative of Switzerland.—Professor Despine, of Geneva.

As Representatives of France.—Professor Bouchard, of Paris and Dr. Lépine, of Lyons.

As Representatives of Great Britain and Ireland.—Sir William

W. Gull, Bart.; Professor Humphry, of Cambridge; Dr. Mahomed, of London.

As Representative of British India.—Sir Joseph Fayrer, K. C. S. I.

As Representatives of the United States.—Professor Jacobi, of New York and Prof. N. S. Davis, of Chicago.

As Representative of South America.—Dr. Gutiérrez-Ponce, of Paris.

As Secretary-General.—Dr. Isambard Owen, of London.

Representatives of other Countries to be hereafter appointed.

In accordance with the following resolution of the first meeting of the above committee held at Copenhagen on the following day:

“That the Secretary be instructed to prepare a statement as to the objects of the Committee, for translation and publication in the journals of the various countries represented;”

I beg leave to submit the following statement to the members of the Medical profession of the United States.

ISAMBARD OWEN,
Secretary-General.

5, Hertford Street, Mayfair, London.

The main objects which the Committee seeks to attain through the Collective Investigation of Disease are to widen the basis of Medical Science, to gather and store the mass of information that at present goes to waste, to verify or correct existing opinions, to discover laws where now only irregularity is perceived, to amplify our knowledge of rare affections, and to ascertain such points as the geographical distribution of diseases and their modifications in different districts. It will be its endeavor to place clearly before the whole profession the limits and defects of existing knowledge, as well as to stimulate observation, and give it a definite direction. It will be a not unimportant incidental result of its work, should it tend, as is hoped, to the better training of the members of the profession in habits of scientific and practical observation, and in systematic methods of recording the facts which they observe.

The age in which we live has seen enormous advances in the sciences on which the fabric of medicine rests, such as chemistry and other branches of physics, physiology, and pathology. Each of these has taken giant strides. It must be admitted, however, that purely medical knowledge has scarcely made proportionate progress. It cannot be expected that it should do so, as it deals with the aberrations of the most complex of organisms, is of all sciences the most difficult, and demands the greatest patience and the largest accumulation of data.

Hitherto the advancement of medical science has been brought about mainly by individual effort. The value of such work in the past we in no way underrate, nor do we desire to lessen the amount of it in the future; but in medical science there is much that defies interpretation from individual experience, and many problems so far-reaching in an ever-widening field, with elements so manifold, that no single man, however gifted and long-lived, can hope to bring the whole within his range. The need, therefore, in medicine, of that combination and concentration of individual work which is adopted in many other branches of science and in commerce, and to which increasing facilities of intercommunication have given so much impulse and so much strength, cannot be questioned. Indeed, it may be said that, resting on individual research alone, medical knowledge can be advanced but slowly and with difficulty. Future progress to any great extent must be the work, not of units acting disconnectedly, but of the collected force of many acting as one. For many to act as one, organization is needed; that organization it is the purpose of our Committee to supply.

Disease is many-sided; and we wish to include in our organization those who see it from every side. All, therefore, whether hospital physicians, family and school attendants, specialists, medical officers of the army and navy, and of workhouses and asylums, will be asked to contribute their quota of observation to the common fund.

In England and Germany organizations for this purpose already exist, through which good work has been accomplished; and a volume entitled the "Collective Investigation Record," containing tabulated returns, with reports upon them and other matter, is published annually by the British Medical Association. France and Austria are alive to the new method. In Scandinavia and in the United States the foundations of asso-

ciations have been laid. Denmark, Russia, and Switzerland are setting their hands to the task. To unite these several associations by an international organization for the study of various problems, and to induce the formation of similar combinations elsewhere, is felt to be a work peculiarly befitting an International Congress. Our Committee is enjoined by the Congress at Copenhagen to endeavor to carry out this work, and, in compliance with that injunction, it invites the co-operation of all who have at heart the promotion of medical science and practice.

The following is the proposed method. A subject having been selected, a person or persons of acknowledged authority will be asked to write a memorandum, in the form of a short essay upon it. The memorandum will succinctly give the present state of our knowledge. It will also point out the directions in which further research may best be made; and, with this view, will suggest a few simple and definite questions upon the subject selected. The questions will relate to matters of fact, to be elicited by observation of cases rather than to matters of opinion.

The contemplated organization will, it is hoped, in time enable the Committee to ask and collect answers to these questions from the profession at large wherever scientific medicine is studied or practised. It will be a further duty to examine, arrange, tabulate, and deduce results from the mass observations thus collected, due credit being given to each contributor for the information he has furnished; and reports on the results of the several investigations will be laid before the International Congress at its next meeting at Washington.

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CLINICAL EXPERIENCES WITH THE MURIATE OF COCAINE.

BY ADOLF ALT, M. D.

The number of publications on experiences with the muriate of cocaine, the local anæsthetic, is already very numerous, especially in this country. Yet, the fact that the discovery of this remedy is of such an importance that it can safely be put side by side with the discovery of the general anæsthetics, and that, in spite of the numerous reports enthusiastic with the results obtained with this remedy, already a number of writers have tried to belittle its value; seems to me to render it a duty for every one to record his own experiences with this drug.

For my own cases I have used a four per cent. watery solution made by myself from Merck's preparation, and a two per cent. solution I obtained from F. W. Foucar & Co., New York. The latter proved little useful as an anæsthetic and I now use it only as a mydriatic for ophthalmoscopic examination. It is different in appearance from my watery four per cent. solution, being decidedly yellow, while the latter is almost colorless, and it also has a most disagreeable pungent odor and irritates the conjunctiva, when instilled. I therefore think it best to rely only on solutions made by myself from the original salt.

Of the latter I am only fully satisfied with the four per cent. solution and never use it in a weaker one for operative purposes. For operations in which the knife or scissors have to penetrate into the deeper tissues, I have insured anæsthesia of

these and the wound already made by the superficial cut, by instilling the solution during the progress of the operation.

In order to render the iris anæsthetic during an iridectomy, I have several times caused the iris to prolapse after the corneal section was made and then dropped the cocaine solution on the prolapsed membrane. After a few minutes I found that the excision was almost painless.

The drug has an undoubted effect upon the nerves of the blood-vessels. This is shown by the loss of elasticity the eye shows, when cocainized, rendering the expulsion of a cataract more difficult (a fact which *Knapp* first mentioned) and by the decidedly reduced bleeding in operations under the anæsthetic influence of cocaine.

The cases in which I have used it are quite numerous, the drug having been in my hand for nearly a month. To relate them all would be a repetition of what others have already published.

I have used it with equal success as an anæsthetic in an operation for trichiasis, in four discissions of the capsule after cataract extraction; in six discissions of the anterior lens-capsule in congenital cataract; in four cases of slitting of the canaliculus and probing of the nasal duct, in two enucleations of tarsal tumors, in one case of iridectomy for glaucoma, in one case of abscision of a prolapse of the iris, in one of tenotomy for strabismus, in one of removal of a large serous cyst from the fornix of the conjunctiva, in several cases of removal of foreign bodies from the cornea, and in one case of cataract-extraction.

I mention all these cases in order to show that the number and variety of cases in which I have made use of the local anæsthesia produced by the muriate of cocaine, is large enough to give some weight to the statement, that this action of the drug is not to be gainsaid.

In a paper read before the St. Louis Medical Society November 8, and which is published in the *Weekly Medical Review*, November 22, I took occasion to mention an experience I had with the drug in a case of iritis, which I consider of great importance, as I am satisfied from it, that the muriate of cocaine

has also a therapeutic effect. I shall relate the case *in extenso* further on.

That the muriate of cocaine has a mydriatic effect is no longer doubted. It dilates the pupil in from ten to fifteen minutes and is thus quicker in its mydriatic action than any of the mydriatics now in use. The mydriasis in a healthy eye disappears in about twelve hours. These two facts, its quickness of action and the early disappearance of the mydriasis, combined with the third fact, that the drug causes only a slight and short paresis of the accommodative apparatus, give it especial value in ophthalmoscopic examinations.

Yet, although the mydriasis, as a rule, disappears much quicker than after the use of atropia, etc., or even homatropia, the action of the drug, while it lasts, seems to be much stronger than the action of other mydriatics. At least, so it appeared to me in a case of discission of a shrunken cataract, which I performed a few days ago. The cataract was so tough that the needle, after having pierced it, was unable to cut it and only shifted it about. During the efforts to cut the lens the aqueous humor escaped, and as it did so, the pupil became fully contracted. I did not make any further attempt to needle this cataract, but at once proceeded to extract a likewise shrunken cataract from the other eye. This accomplished, I found that a very small quantity of aqueous humor had been secreted in the eye first spoken of, and that the pupil was again dilated *ad maximum*. With atropia and other mydriatics my experience has always been that the aqueous humor once lost, mydriasis could only be obtained again by renewed instillations of the mydriatic after the anterior chamber was re-established.

I have, furthermore, been able to dilate a pupil by cocaine and then keep it dilated by atropia, which at first refused to yield to the latter drug. This seems to me to be a further proof, that cocaine has a direct influence upon the nerves of the blood-vessels.

Another observation which I have now made several times and which I stated in the paper referred to, is, that the muriate of cocaine has a decidedly quieting effect on the oscillatory movements in nystagmus of an eye not perfectly blind. This

is an interesting fact and when better studied will have some direct bearing on the pathology of nystagmus, showing that peripheral influences can, at least, have something to do with the production of this disease.

I now proceed to the report of the case of iritis in which, I am satisfied, the muriate of cocaine acted not only as an anæsthetic, but also in a therapeutic way.

On November 1, I extracted, without anæsthesia, a hypermature cataract, with a considerable quantity of deposits of lime from the right eye of Miss E. P., æt. 45. There was nothing remarkable in the operation, nor did the eye show any undue irritation for several days following it.

November 5, 2 P. M. (beginning of fifth day). Eye somewhat irritable, conjunctiva more injected than before. Pupil large from the use of atropia. As I thought the irritation might be due to the atropia, I now used duboisia in its stead. At 8 P. M., nothing changed, except some œdema of upper lid. At 10 P. M., some discharge on cotton. Upper lid and inner canthus œdematous.

November 6, 2 A. M. Patient has suffered intense pain for several hours and is in a state of great anxiety and excitement. Discharge on cotton, both lids swollen, skin shining. Conjunctiva œdematous. Pupil contracted. I had just a day or two before received a small quantity of the muriate of cocaine and I now instilled two drops of the four per cent. solution into this eye. The pain became less after a few minutes, and after having instilled a few drops more the patient went to sleep and did not wake until 6 A. M., that is, for nearly four hours. I left some of the solution at her bedside with the order to instill a drop or two, as soon as the least pain would show. I also left off the bandage.

At 8 A. M., I found her generally comfortable, although the swelling of the lids and surrounding tissue, as well as the chemosis of the conjunctiva, was increased, and there was quite a quantity of that ominous discharge so dreaded after cataract-extraction. There was a quantity of exudation in the anterior chamber, covering the inner half of the iris and pupil, but the outer half of the pupil was dilated. The eye was anæsthetic.

At 2 P. M. the same day *status idem*. Some of the corneal epithelium at the inner half was necrotic and came off. Patient required an instillation of the muriate of cocaine about every two hours in order to be free from pain.

This mode of treatment was continued during the night and for several days, until the first signs of wrinkling could be seen on the outer skin. Now ice applications were added. Duboisia was used besides the muriate of cocaine.

The severity of the iritis was such that I had practically given up the eye, and when after all I saw it subsiding, I told the patient that she would have to wait a considerable time, until the eye would be so far recovered that a secondary operation, which I supposed was to be an iridectomy, could be thought of. But to my great astonishment, œdema, chemosis, exudation in the anterior chamber, irritability of the eye and injection of the conjunctiva, diminished daily and in a manner in which I have never seen it before.

On the 8th of the month the first wrinkle was to be seen on the greatly swollen upper lid and on the 22d, just a fortnight after, I made discission of the capsule and might have done it two or three days sooner. All these days the eye had been kept free from any pain whatever by the use of muriate of cocaine. The freedom from pain and anxiety and the possibility of resting thus procured to the patient, was evidently of an immense value in this case.

This, of course, is only one observation of the kind—yet, if I am not greatly mistaken, the benefit derived from the muriate of cocaine in this case, will be derived from it in other similar cases.

EXPERIENCES WITH HYDROCHLORATE OF COCAINE.

BY DR. W. HUNICKE, OF ST. LOUIS, MO.

It has been my good fortune to obtain a small quantity of cocainum hydrochloricum, with which I have experimented upon the following cases.

CASE I.—M. M., æt. 9 years, suffering with conjunctivitis phlyctænulosa. Phlyctænulæ on temporal margin of cornea (left eye). Lachrymation, photophobia and blepharospasm intense. One drop of a four per cent. solution of cocain. hydrochlor. instilled, relieved all symptoms of irritation. Anæsthesia of conjunctiva and cornea produced after 5 minutes, lasting about half an hour, when symptoms of irritation began to reappear.

CASE II.—L. S., æt. 13 years. Strabismus convergens, left eye. Two drops, with an intermission of five minutes between each, were instilled into the conjunctival sac. Five minutes after the second instillation, I proceeded to operate. Patient experienced no pain while the incision was made into the conjunctiva, but when the muscle was seized with the strabismus hook, patient grew very uneasy, and when the tendon was severed from the sclera, she screamed violently, complaining of pain.

In this case I believe that the following faults were committed in the application of the drug.

First, that the quantity of cocain. hydrochlor. applied to the conjunctival sac, in order to produce anæsthesia of the deeper parts of the eye, was insufficient.

Second, the drug was not applied gradatim to the parts to be operated upon.

Having gained this experience, I determined to change the mode of application.

In Cases III, IV, V and VI, all cases of strabismus convergens, a four per cent. cocaine. hydrochlor. solution was dropped into the conjunctival sac, just as above. A vertical incision was then made through the conjunctiva, and the patient directed to look outwards. The wound was made to gape by means of a strabismus hook and one drop of cocaine. applied, directly to the scleral insertion of the muscle. The patient was then allowed to close his eye gently and rest for five minutes, after which time the muscle was seized and severed from its insertion, patient feeling no inconvenience or pain during the operation or any time afterwards.

CASES VII—VIII. Foreign bodies extracted from cornea; symptoms of irritation disappearing about five minutes after instillation of cocaine. Foreign bodies were removed without pain.

CASE IX.—Superficial keratitis. Conjunctiva hyperæmic, cornea infiltrated in the centre, epithelium shed, photophobia, profuse lachrymation and pain, pupil contracted. Pupil did not react after instillations of atropine (iv. grains to ʒj). One drop of cocaine being applied, the pupil was dilated, in about fifteen minutes, photophobia and pain had disappeared. Atropine was then applied and the pupil continued to be dilated under the influence of this drug.

In all cases where I have used cocaine, I found it to have a mydriatic effect. Using it upon myself, a four per cent. solution produced anæsthesia in about five minutes, and mydriasis and paresis of accommodation in about ten or fifteen minutes. The cornea and conjunctiva would regain their sensitiveness in about thirty minutes, whereas the mydriasis and paresis of accommodation remained for several hours.

I would like to call attention to an observation which I have made, and that is, that in all cases, cocaine produced a change in the appearance of the cornea, the cornea appearing dry, and the reflection from it somewhat diminished. Was this due to my solution of cocaine or does cocaine have an influence upon the secretion?*

NOTES ON SOME OF THE PHYSIOLOGICAL EFFECTS AND PRACTICAL APPLICATIONS OF COCAINE HYDROCHLORATE.

BY JOHN GREEN, M. D., ST. LOUIS.

On the 7th of the present month (November), through the kindness of my friend Dr. Wm. Hunicke, I obtained about two grammes of a four per cent. solution of cocaine hydrochlorate from the laboratory of Merck, of Darmstadt; since that date I have received several additional samples by Merck, and one from F.W. Foucar & Co., of New York; Merck's preparation is in

*This appearance is undoubtedly due to a fatty substance which is seen swimming on the surface of a freshly-made watery solution of the salt. [EDITOR.]

the form of a nearly white powder, soluble in less than twice its own weight of cold water, and forming a nearly colorless solution, of a bitter taste, and of a faint odor, suggesting the aroma of chocolate. Foucar's preparation, which was furnished as a solution, said to be of the strength of four per cent., is of a yellowish tint and of an odor suggestive of dilute alcohol.

Dropped into the conjunctival sack Merck's preparation, in a four per cent. solution, is practically unirritating, causing neither smarting nor redness. Foucar's solution, on the other hand, produces decided smarting of the conjunctiva, and occasionally a slight transient hyperæmia.

With this exception the action of the two preparations appears to be identical, from which I infer that Foucar's solution contains some impurity, such as alcohol, to whose presence the primary smarting and redness are to be attributed. In the present notes I shall, unless otherwise stated, refer to Merck's preparation only, and in the form of a four per cent. aqueous solution. The quantity used at each instillation has been, as nearly as practicable, one minim.

One minim of cocaine solution, instilled into the conjunctival sack, produces full anæsthesia of the *conjunctiva sclera* in from four to six minutes, so that this membrane may be seized and lifted by the fixation forceps without giving rise to any other sensation than that of painless pressure or traction upon the eyeball. Anæsthesia of the cornea follows a little later, requiring from eight to ten minutes for its complete establishment. Within the same period the *conjunctiva tarsi* and the lid margins are found to have become insensible to the pressure of the spring speculum, whose presence is borne without giving rise to the slightest reflex contraction of the orbicularis muscle. With the development of the anæsthesia the conjunctiva and sub-conjunctival tissue become distinctly anæmic, and slight grades of hyperæmia disappear. Incisions and dissection of the conjunctiva are attended with less than the usual hæmorrhage, and the print of the fixation forceps is often unmarked by any trace of ecchymosis. This immunity from bleeding is doubtless attributable in part to the absence of reflex muscular contraction, but the anæmia which follows the instillation of

the drug points also to a direct influence upon the vaso-motor nerves. At the end of ten minutes following the instillation, the pupil has generally begun to dilate, in most cases sufficiently to admit of the easy inspection of the interior of the eye with the ophthalmoscope, in the erect image. The dilatation reaches its maximum in about twenty minutes, but it does not ordinarily attain the grade which follows the instillation of any one of the alkaloids of the atropia group; neither is it so complete, for the pupil continues to respond in some degree to changes in illumination. The paresis of accommodation is but slight, and passes off in the course of a few hours, but a slight dilatation of the pupil may often be observed after twenty-four hours. It has appeared to me that the mydriasis becomes more pronounced, and is of longer duration, in cases in which for any reason the instillations have been repeated on several successive days.

The special properties of cocaine hydrochlorate, which have already won for it a unique position among the most valuable therapeutic agents employed in ophthalmic practice, are (*a*) its wonderful local anæsthetic power, which enables us not only to perform many operations absolutely without pain, but also to give immediate and perfect relief in a host of painful conditions attended with photophobia and blepharospasm; (*b*) its marked effect in diminishing the flow of blood in the blood-vessels which lie within the region of its influence, thus rendering many operations comparatively bloodless and pointing the way also to almost unlimited applications in all affections attended with hyperæmia; (*c*) its property of controlling reflex neuroses; and (*d*) its prompt effect in dilating the pupil, with but moderate and transient disturbance of the accommodation, thus ranking it above all other known mydriatics in cases in which it is desired simply to obtain a perfect view of the whole interior of the eye.

In the following notes of special instances in which I have found the employment of cocaine instillations useful, I shall attempt briefly to give results, without entering into any narration of cases in detail.

As a means of facilitating the inspection of irritable eyes in young children, and timid patients generally, the cocaine anæsthesia has proved of the greatest service. A single instillation

suffices, within about five minutes, to overcome the reflex contraction of the orbicularis muscle, and thus renders it easy to inspect the cornea and the conjunctival sack, and to evert the upper lid. A willful child, will, however, sometimes resist even a painless manipulation of the eyelids, and in such a case the administration of a few drops of chloroform by inhalation may be required in addition to the use of the local anæsthetic.

By means of a single cocaine instillation the pain attending conjunctivitis is controlled, and the otherwise painful application of astringent solutions or of the sulphate of copper crayon is rendered absolutely painless. The general hyperæmia of the eyeball is also materially lessened, with corresponding lessening of the after irritation. In cases of conjunctivitis in which pain and hyperæmia are the predominant symptoms, I have obtained most satisfactory results from the instillation of the cocaine solution alone, using it under my own observation in the morning and allowing the patient to instil a drop on retiring for the night.

A single instillation is generally sufficient to afford relief, within a few minutes, in cases of painful abrasion, phlyctenula or ulcer of the cornea. The attendant photophobia, lachrymation and blepharospasm, as well as the hyperæmia of the eyeball, have either entirely disappeared or have been materially lessened. The good effect of the remedy has generally continued throughout the remainder of the day, and has been still manifest when the patient was seen again after the lapse of twenty-four hours. In milder cases I have been satisfied with using the remedy once a day, but in severer cases I have allowed the patient to have a drop instilled at bedtime also.

In a case of acute exacerbation from exposure to cold, occurring in the course of a chronic conjunctivitis, in which several phlyctenulæ had appeared in the upper segment of the cornea, with commencing formation of pannus, and in which the frequent instillation of a half per cent. atropia solution during two days had failed to produce more than a half dilatation of the pupil, a single instillation of the cocaine solution gave complete relief from pain, and was followed within ten minutes by a dilatation of the pupil nearly *ad maximam*. This prompt and full dila-

tation of the pupil I believe to have been due to the sedative action of the cocaine, permitting the cumulative effect of the repeated instillations of atropia to manifest itself, rather than to the proper mydriatic action of the cocaine, which is neither so rapid in developing nor so complete as in this instance. In this case daily instillations of the cocaine solution have been kept up for about two weeks, with the uniform effect of lessening the pain and hyperæmia, and, in conjunction with the use of atropia, of maintaining more perfect mydriasis than could be secured from the atropia alone.

In two cases of corneal irritation, in which the employment of atropia was prohibited by reason of well-marked atropia conjunctivitis, the cocaine solution has proved a fully satisfactory substitute. All the usual good effects of atropia have been obtained, together with a more than usual effect in quieting pain and lessening hyperæmia.

In iritis I know of no remedy which approaches cocaine in its power of giving prompt and full relief from pain, and it appears to be equally effective in controlling the acute reflex pain which follows exposure to light and the duller nocturnal pain which is generally associated with the recumbent position. It appears also, through its direct action upon the blood-vessels, to exert an important influence in limiting the extent and the activity of the inflammation. It is especially efficient as an adjuvant to atropia in promptly establishing and maintaining full mydriasis, and it has also rendered good service in effecting the rupture of adhesions which had resisted the mydriatic action of atropia.

In two cases of nystagmus I have had occasion to avail myself of cocaine mydriasis to facilitate ophthalmoscopic examination. In one of the cases, a young adult with congenital nystagmus, no effect was observed beyond the usual dilatation of the pupils. In the second case, however, a nearly albinotic girl of eight years, I was able to verify a recent, and so far as I know, original observation of Alt, namely, that under the influence of the cocaine instillation the oscillations of the eyeball have been for the time restrained both in frequency and in extent. Before instilling the solution I could only catch momentary glimpses of

the details of the fundus in the inverted image, whereas, twenty minutes after the instillation I was able to make a satisfactory ophthalmoscopic measurement of the refraction, — O.D. M. = 5.5 d.; O.S. M. = 1.5 d.; in the horizontal meridian. These measurements were several times repeated under cocaine on successive days and were subsequently verified by subjective tests with trial glasses. The child is now wearing correcting glasses, O.D.—5.5 d. sph.—1.5 d. cyl. Ax. horizontal, O.S.—1.5 d. sph.—1.5 d. cyl. Ax. horizontal. In this case the effect of the drug in controlling the nystagmus appears to continue in some degree for more than twenty-four hours, and it seems not unreasonable to hope for some permanent amelioration as a result of its continued use. In a third case of nystagmus, in a girl of six years, complicated in both eyes with zonular and pyramidal cataract and irideremia, the oscillatory movements of the eyeballs are controlled to an extent to admit of a good ophthalmoscopic measurement of the refraction (H.=5. d.) through the transparent peripheral portion of each lens.

The local anæsthesia which is obtained from one, two, or at most, three instillations of the cocaine solution into the conjunctival sack has proved entirely sufficient to admit of the painless performance of all operations limited to the conjunctiva and cornea. In operations involving the deeper tissues, as in certain operations for pterygium in which deep sutures are employed and in the operation for strabismus, it is generally necessary to instil a little of the solution into the wound, after which the deep sutures may be placed, or the tendon raised and divided, without pain. In iridectomy the seizure and abscision of the iris are painful, but the sensibility of a prolapsed portion of iris may be annulled within a minute or two by dropping upon it a very minute quantity of the solution. The discision and simple linear extraction of soft cataract are painless, and the same is true of the discision of membranes obstructing the pupil in aphakial eyes, provided that no traction is made upon the iris or the ciliary attachments of the membrane. The extraction of cataract is also painless, with the exception of the iridectomy, and this, too, may be rendered painless by producing

an artificial prolapse of the iris and applying a little of the solution to the prolapsed portion. But regarding the safety of this procedure, the occurrence of suppuration in the single case in which I have practiced it compels me, for the present, to suspend judgment. In the removal of foreign bodies imbedded in the cornea, a single cocaine instillation suffices to render the cornea entirely insensible in the course of from five to eight minutes, and two instillations have, within ten minutes, produced a degree of anæsthesia sufficient to admit of the somewhat protracted picking and scraping required for the removal of an old and firmly adherent lead deposit. In one case a little pain was felt toward the end of the operation, but the sensibility was promptly controlled by another application to the denuded corneal tissue. In all cases of operations performed under cocaine anæsthesia the after-reaction and pain have been remarkably slight, and frequently altogether absent.

The operation of probing and slitting the lachrymal punctum and canaliculus is greatly facilitated, and is rendered wholly painless, by the instillation of a drop of the solution at the inner canthus, and the dilatation of a stricture of the nasal duct can generally be accomplished without pain by previously injecting a single drop into the lachrymal sack. The anæsthesia may then extend even into the nostril, provided that the way is sufficiently free to admit of the passage of the solution.

In canthoplasty the painful part of the operation is materially abridged by a single instillation at the outer canthus; the insertion of the blade of the scissors into the conjunctival sack and the placing of the sutures are painless.

Incisions in the tarsal tissue upon its conjunctival aspect are rendered painless so far as concerns the conjunctival layer, and a softening chalazion may be laid open with little or no pain. If it is desired to stir up and scrape out the softened tissue of the tumor, it may be almost painlessly accomplished by first injecting a little of the solution into its substance.

In conclusion, it may perhaps be permissible to record my belief that in cocaine hydrochlorate ophthalmic practice has been enriched by a therapeutic agent of the first order.

A CLINICAL REPORT ON SOME USES OF MURIATE OF COCAINE IN OPHTHALMIC PRACTICE.

BY DR. S. C. AYRES, CINCINNATI.

The new corneal anesthetic has set the ophthalmic world on fire, and contributions are pouring in on all hands indicating its valuable qualities. Its appropriation to ophthalmic uses marks a new era in our practice. It may be compared to the discovery of anaesthesia by means of ether, but it will not take it so long to get into general use, for this is a progressive age and the new things are now very quickly taken up and weighed in the balance, and if found wanting as quickly thrown aside. This new remedy promises a wide field of usefulness, not only in ophthalmology, but in special and general surgery. Experiments so far only go to confirm the first favorable impressions made of it.

The following clinical observations are given for what they are worth at this early day in the use of this new alkaloid. I can speak in the most satisfactory terms of its valuable effects so far as I have been able to test them.

CASE OF BULLOUS KERATITIS.

Miss F. has been suffering for several months with her left eye. There is a large central opacity of the cornea and over this the epithelium is raised in bleb-like manner. By pressing the lower lid on the cornea the fluid underneath the epithelium can be moved upward or to either side. There is great photophobia at all times and unusual lachrymation when the eye is examined. I determined to remove the epithelium, but before doing so was desirous of producing full analgesia with cocaine if such a thing was possible. A few weeks ago I had under treatment a nearly similar case except that it followed an incised wound of the cornea. The epithelium was removed four times and the cornea cauterized with carbolic acid. The first operation was done without an anæsthetic and he suffered exquisitely during the operation and for several hours afterwards. The subsequent operations were done under chloroform. With this recent experience I was desirous of relieving my patient of pain if the

then new and untried remedy could accomplish it. I instilled two or three drops of a five per cent. solution and had her close her eye. In ten minutes it was repeated and five minutes later a third instillation. The cornea was now quite insensible to the touch as were the ocular and palpebral conjunctiva. With a pair of fine forceps I tore the epithelium off without causing any discomfort. With a spud I scraped the central portion of the cornea, which was softened and broken down. I then applied an almost saturated solution of carbolic acid to the cornea on a line marking the boundary of the bleb. During all this there was scarcely any pain and very little lachrymation. A week later the epithelium having been reproduced I began its removal without the previous use of cocaine. She suffered quite severely and the eye wept very profusely and she had but little control of its movements. I then used the cocaine and completed the operation under its use with the same results I had the first time.

IN GRANULAR CONJUNCTIVITIS WITH GREAT PHOTOPHOBIA.

In one very bad case the cocaine had a remarkably quieting influence on the eye. In a few minutes after its use he was able to open his eye with a considerable degree of comfort and the lachrymation was markedly diminished. I had been using atropine but it did not seem to have much influence on the pupil. After getting the full influence of the cocaine his pupil was widely dilated and remained so. Whether it was from the combined influence of atropine and cocaine or the controlling influence of the latter which allowed the atropine to act is yet to be determined.

CASE OF HYPOPION KERATITIS.

Pat M., *æt.* 62, has extensive ulceration of the left cornea with hypopion. The eye has been extremely painful for two weeks, during which time I made a paracentesis of the cornea twice. Each operation was followed by unusual pain, which lasted several hours. The solution of cocaine (5 per cent.) was instilled twice at intervals of ten minutes. Five minutes after the second instillation he was examined to find what influence it had had on the cornea. I could touch any part of the cornea, including the ulcerated portion, with a probe without giving him any pain or discomfort. There was no lachrymation or

spasm of the orbicularis. When the conjunctiva was seized with the fixation forceps he made no resistance. The puncture was made through the floor of the ulcer and aqueous and pus evacuated. Some pain followed but it lasted only a few minutes, and he soon got up and left the office. This was quite in contrast with his actions after the previous operations, for after them he was compelled to lie quietly for nearly an hour.

FOREIGN BODIES ON THE CORNEA.

In these painful accidents we are likely to have a most valuable aid in the new local anesthetic. To be able to remove them easily, quickly and with little pain is a great desideratum. It can certainly be accomplished in the most satisfactory manner under the influence of cocaine. As the comparison between the removal of a foreign body from the same individual with and without the anæsthetic affords the best testimony, I select one from a number:

Mr. B. has been suffering all night from a foreign body imbedded in the cornea. I used a drop of the five per cent. solution and had him wait ten minutes with his eyes closed. I then proceeded to remove the offending substance, which was done with so little pain that he declared it was not worth considering when compared with a similar experience he had had a few months previously.

In the treatment of such cases among children and nervous persons who have but little self control the new agent is destined to prove a boon to both patient and operator.

CENTRAL SUPERFICIAL NECROSIS OF THE CORNEA.

Nellie M., æt. 12, has had a chronic inflammation of the cornea, dating back about eight months. The central portion of the corneal epithelium is opaque, roughened and irregular. The inflammation has been of an indolent character for months past, and while it has fluctuated from bad to worse, there has been no real progress made towards improvement. I decided to scrape the dead tissue off and did so, but she experienced very acute pain. In the course of two weeks there was marked improvement and the area of the necrosed tissue was considerably

lessened, but it was deemed advisable to again scrape the cornea. This time I made two instillations of a solution of cocaine before the operation. She experienced some pain but she could endure it very well and said it was very slight as compared with what she had suffered two weeks before.

DOUBLE IRIDECTOMY PRELIMINARY TO CATARACT EXTRACTION.

Mr. M., *et.* 48, has semi-mature cataracts and it was decided to make preliminary iridectomy. The solution of cocaine was instilled twice at intervals of ten minutes, and five minutes after the second instillation the operation was performed. The introduction of the speculum caused but little discomfort and there was no lachrymation or spasm of the orbicularis. Fixing the eye was scarcely felt, and the incision caused but little pain. The excision of the iris caused some pain, but it was apparently much less than usual. It is at present supposed that cocaine has but little if any influence on the iris, but further experiments are required to determine the scope of its effects.

STRABISMUS CONVERGENS.

Mary H., *et.* 12, has alternating strabismus convergens. Vision is nearly perfect in both eyes. She is ambitious to have her eyes straightened, and will have it done without ether. A four per cent. solution of muriate of cocaine was instilled and in fifteen minutes it was repeated. In five minutes after the second instillation it was again repeated. Five minutes later I tested her accommodation, and found it perfect, although her pupils were widely dilated. I then proceeded with the operation. The spring speculum caused no irritation, and there was no lachrymation. The ordinary subconjunctival operation was done, and not a drop of blood was lost. She had perfect control of her eye and turned it outward when told to do so. I expected her to experience pain when the muscle was severed, but she did not, and when it was all completed I asked her if it was painful and she answered, "no, not a bit." It was remarkable to have a child of her age, go through the operation which is

ordinarily so painful, and to express herself so emphatically in favor of the anæsthetic properties of the cocaine.

CHALAZION MULTIPLE.

Mr. R., æt. 45, chalazion multiple, two in right upper and one in left upper lid. The inner one in the right lid is acutely inflamed and the eyelid is very sensitive. It was with great difficulty that I could evert the lids, and the spasm of the orbicularis was so great that I could only hold them everted a moment. I managed to apply the four per cent. solution of cocaine to the inner surface of the upper lids and then had him close them for ten minutes when I reapplied it. Seven minutes later I made a third application and also brushed the lids over the tumors with the solution.

In five minutes I proceeded to puncture the tumors and remove their contents with a spoon. I could now evert the lids without difficulty, the spasm of the orbicularis being apparently under control. I punctured the tumors and removed their contents, but it was not entirely without pain, but his suffering was not nearly as great as it generally is in similar cases.

EXTRACTION OF LENS FROM THE ANTERIOR CHAMBER.

Mr. P. The left lens is in the anterior chamber and exerting considerable pressure and for fear it should again drop back into the vitreous I determined to extract at once.

A four per cent. solution of cocaine was used three times before the operation. The introduction of the spring speculum caused no lachrymation nor spasm of the orbicularis. The incision in the cornea was made below and the lens extracted without accident. When asked if the incision in the cornea caused any pain he said "No, I did not feel it but *heard* it." Two years ago I extracted the right lens which had fallen forward into the anterior chamber by a similar operation. He had this experience to compare the latter operation with and expressed himself highly gratified with effects of the cocaine.

TWO CASES OF ORBITAL TUMORS.

BY JOSEPH AUB, M. D., CINCINNATI.

MICROSCOPICAL EXAMINATION BY ADOLF ALT, M. D.

CASE. I. In July, 1879, I was called to see Mrs. McEl—, who had been suffering with exophthalmus for some time, but became seriously alarmed when, after stooping over some work she found her eye completely forced out of the orbit. On examination I found the eyeball protruded to such an extent that the lids had closed in behind the eyeball. With considerable difficulty, I released the lids from their position so that they could again at least partially cover the globe. Patient stated that two years previous to my first visit and without any assignable cause the left eye commenced to protrude and sight gradually to fade. She has never had much pain in or around the eye, but since the first appearance of trouble in the eye has had but eight or ten attacks of severe pain in the head, some often lasting more than two hours. During these attacks she would feel dizzy and have a throbbing sensation in the eye. Sight has been altogether lost since one year.

St. pr. Eyeball protruding fully seven lines and directed downwards and outwards. Motion upward entirely wanting. On bending forwards the protrusion is not increased. Eyeball covered with large veins. Cornea, anterior chamber, lens and vitreous clear. Optic disc is hyperæmic and its margins obliterated. No swelling of disc; veins are much enlarged and tortuous. Nothing can be felt on the orbital walls above, obstructing the movements upwards, although motion in that direction is entirely wanting. On passing the finger behind the eye, the optic nerve can be distinctly felt as it passes into the globe and passing back from that an oval-shaped swelling, filling the inner and lower portion of the orbital cavity and extending backwards to the apex of the orbit can be distinctly outlined. The surface of this

tumor is irregular but not ragged, hard to touch and evidently surrounds the optic nerve. Near the entrance of the optic nerve at the eyeball it is constricted to the size of the nerve and seems to be embraced within the optic nerve sheaths. The eyeball is of normal tension and projects so much as to allow one to feel distinctly the optic nerve and the attachments of the oblique muscles. Pressure upon the eyeball does not reduce the exophthalmus. Auscultation reveals increased bruit, but no pulsation in the orbit.

Patient's health had been otherwise perfectly good. Three weeks previous to my visit she had given birth to a healthy child and has plenty of nourishment. The eye symptoms have not been aggravated by the child-bed.

The diagnosis of an orbital tumor was made and enucleation was advised. The next morning assisted by Dr. O. E. Davis, the family physician, the patient was placed under the influence of an anæsthetic and the eyeball denuded of conjunctiva, the tendons of all the muscles cut close to the sclerotic. With the finger passed backwards between the globe and enveloping sheaths, I was enabled to dissect the tumor free from the surrounding orbital tissues down to the apex. With a long scissors curved on the flat I was then enabled to cut the optic nerve close to its entrance into the orbit. The entire tumor and eyeball were thus removed in one mass. Nothing unusual occurred, either during the operation or the healing. Patient was up on the third day and had an artificial eye inserted at the end of three weeks.

MACROSCOPICAL EXAMINATION.

Eyeball apparently normal. Close behind its entrance into the eyeball the optic nerve begins to swell and assumes the shape of a spindle, the posterior end of which evidently lay farther back in the orbit, or the *canalis opticus*, than where it was cut when being removed.

A longitudinal section through eyeball and nerve shows the greatest thickness of the hardened tumor to be about three-fifths of an inch. This includes the sheaths of the optic nerve which are enormously thickened. Near the center of the tumor

it contains a large irregular space filled with a gelatinous material.

The optic nerve at its entrance into the eyeball seems very small, the papilla optica appears normal.

The conditions of the eyeball are of no importance.

MICROSCOPICAL EXAMINATION.

The tumor consists chiefly of spindle-shaped and stellated cells. In the center of the tumor these cells are so closely pressed that the tissue has the appearance of a tough fibrous tissue; towards the periphery they are loosely packed and a hyaline intercellular substance is found. These cells are frequently arranged concentrically and form nests somewhat resembling pearl-nodules. This arrangement of the cells seems to be especially frequent around small blood-vessels, which are very numerous throughout the whole of the tumor. Between the myxoma-cells a large number of small round cells and free nuclei are lying. In many parts of the growth the mucoid substance is accumulated in the form of smaller and larger cysts of irregular or round shape.

Closely connected with the tumor of the nerve proper is the enormously swollen pia mater sheath. Its fibres are also pervaded by innumerable cells of the same character as those of the tumor. The dura mater sheath is but slightly swollen and contains no cells of the tumor.

The optic papilla, which macroscopically appeared normal, shows a distinct atrophic excavation. The tumor had bent the nerve close to its entrance and thus the outer sheath of the nerve on one side lies in contact with the sclerotic. In consequence the fibres of the lamina cribrosa are shifted towards the opposite side and run obliquely. The nerve fibres are nearly perfectly gone in this region. Behind the lamina cribrosa, however, the optic nerve seems normal for a small distance; there is especially no hypertrophy of its connective tissue trabecules.

Further back the connective tissue and then the nervous tissue are filled more and more with nuclei and spindle-shaped cells which increase in number, until it is impossible to recognize anything of the normal structure of the optic nerve.

The central retinal blood-vessels contain blood. The retina appears unaltered with the exception of the region of the optic papilla, where the nerve-fibre layer has almost totally disappeared.

MICROSCOPICAL DIAGNOSIS.

Myxosarcoma nervi optici.

CASE II.—Miss Minerva St. of Roane county, W. Va., called to see me in April 1884, and gave the following history of her case: Two years ago whilst walking, she stumbled accidentally, falling with great force, and striking the upper orbital margin. The eye was swollen for a few days following this accident. Since that time the eye was gradually displaced downwards and projected outwards. Sight became slowly dimmer. The eye was painful from exposure, the lids not covering it entirely. At no time has there been any inflammation of the eyeball nor any pulsation in the eye or behind it. Patient is a small petite figure, but has always enjoyed good health.

On examination I found the eye pushed downwards and outwards and protruding to the extent of 4". This exophthalmus was not increased when patient would stoop over a while. Movements good in all directions except upwards, the eye being brought only to the horizontal plane. In the median position the left eye was about 6" lower than the right one. Sight was reduced to counting fingers at 6 feet. Visual field good. The refracting media were clear. Ophthalmoscope showed the optic disc very hyperæmic, veins very tortuous, and both veins and arteries swollen. The upper lid hung over the eyeball, and could be raised only with great difficulty. From the centre of the supra-orbital ridge is a hard bone-like projection extending downwards under the upper lid and reaching from the supraorbital notch to the outer canthus. This projection does not involve the orbital margin from which it is distinctly separated; it is irregularly formed but smooth on the surface. At the inner margin it can be felt to extend backwards into the orbit to some extent. On pressure decided crepitation is noticed, and the growth seems to yield very slightly on pressure from all directions. No bruit and no

pulsation in the growth. The surface of the growth itself was very hard to the touch.

From the history of the growth and the accident preceding its development, I supposed that the supra-orbital plate of the frontal bone had been fractured and the tumor developed in consequence thereof. I was confirmed in my opinion by the crepitation and also by the fact that the tumor although yielding somewhat in its entirety to pressure, did not show any spot which would indicate a softness. The entire growth was of a bony hardness. Its smooth surface and hardness, its location near the frontal sinus, the favorite seat of osteoid growths, and its slow development led us to the diagnosis of an osteoma. In this I was confirmed by Dr. S. C. Ayres, who was called in consultation. It was determined to remove the growth, which was felt to extend backwards into the orbit and almost to the apex. The tumor was supposed to have caused paralysis of the superior rectus and the levator palpebræ by pressure, but not to have involved these muscles in the growth. If possible, the eyeball was to be preserved as an organ of vision. The patient was given a tonic of iron and bark and told to continue its use for four weeks, when she should return for the operation.

Patient returned on May 17, in unusual good health, and on that day the operation was performed, Drs. S. C. Ayres and A. B. Thrasher assisting. An incision was made through the upper lid from the supra-orbital notch to the outer canthus, parallel to and a little below the orbital margin. When the surface of the tumor was reached, the soft parts were held apart and I proceeded to divide the adhesions of the tumor to the upper orbital walls. In doing this I found that I was also able to cut into the tumor which, instead of being of bony hardness, appeared now to be cartilaginous. After some difficulty, I detached sufficient of the coverings of the growth, to enable me to pass my finger along the growth backwards, and obtaining a purchase in this way I turned the growth out of the orbit without further cutting. The cavity was found to be perfectly smooth but extended backwards to the apex of the orbit. After thorough cleansing, a small drainage tube was passed back to the apex of the orbit, one end of which was allowed to project at the outer, and the other end

from the inner angle of the incision. The intervening space was closed with sutures. A compress bandage was applied. Patient received one-fourth grain morph. sulph.

May 18. Patient rested well. No pain. Pulse 96. Temperature $99\frac{1}{2}$. Only a slight edema of upper lid. On lifting the lid the eyeball was found to have been pushed back into the orbit and considerably elevated. Motion except upwards was good. Sight was materially improved.

May 18. Patient has had no pain, nor trouble of any kind. The drainage was removed, and new tube introduced. Cavity has been washed daily with a boracic acid solution. No secretion. Sutures removed.

May 24. Drainage tube removed altogether. Cavity filling up. No fever, pulse 90. Appetite good. Patient is up all day and feels well. Ptosis is less marked, the lid at its inner portion being slightly raised. Exophthalmus entirely reduced. Motion upwards wanting altogether. Patient can recognize small objects at a distance of 100 feet and can tell time on a small-sized ladies' watch with ease.

May 27. Wound entirely closed. No swelling. Some tenderness on deep pressure. Motion as before. Ophthalmoscope shows the fundus in better condition, hyperæmia of disc reduced and veins and arteries almost normal in size. Patient reads small newspaper print with ease. Discharged.

The tumor at the time of its removal was 4 cm. long and 22 mm. wide. Its longitudinal circumference was 9 cm., whilst at its widest point the circumference was 7 cm. Its weight was not taken. After hardening in Mueller's fluid it was sent to Dr. Alt for microscopical examination. From its location and the developments during the operation, we found that we had erred as to the diagnosis of osteoma and have come to the conclusion that the tumor was developed from the lachrymal gland, involving the entire gland in the process.

MACROSCOPICAL EXAMINATION.

The specimen sent to me is probably half of the tumor removed by Dr. Arb. On its cut surface it is about three times as long as it is broad. Its uncut surface is nodular and irregu-

lar in shape. The tumor has apparently been lying within a dense fibrous capsule, which is as yet adhering to it in several parts. The cut surface shows a large number of islets of translucent tissue, probably cartilage tissue, which appear to be divided from each other by tougher bands of a darker hue. The tumor is hard, but elastic.

From the history of the case given by Dr. Aub and its macroscopical appearance, which tallies with that of other specimens from the same region I have had occasion to examine, my diagnosis was at once that I had to deal with a tumor of the lachrymal gland and that it was enchondromatous in character.

MICROSCOPICAL EXAMINATION.

In fine sections the tumor shows a somewhat different character, namely, it is a mixed tumor.

The fact that we have to deal with a tumor of the lachrymal gland is evident by a number of perfectly normal glandular structures characteristic of that organ. Here the epithelial cells are yet normally arranged and the lumen of each cell-cylinder is preserved. In other parts the cell-cylinder has partially lost its lumen and what remains of the latter is dilated and filled with a gelatinous mass of a strange yellow color, which, however, can hardly be anything else but the condensed secretion of the glandular cells.

In other parts there are perfectly solid epithelial cell-cylinders without the well and regularly arranged peripheral layer of cylindrical epithelial cells. These cylinders consist of epithelial cells, which in their growth have pressed each other and thus attained all sorts of shapes.

The bulk of the tumor is made up of a transparent hyaline matrix. In this are embedded cartilage cells in large quantities. These cells are in parts, so numerous as to give the tissue the appearance of embryonic cartilage, whilst in others, evidently of longer existence, the matrix is comparatively prevalent. In some parts of the tumor these cells are evidently undergoing a myxomatous metamorphosis, and there are, indeed, large nests of myxoma cells. In other parts of the tumor there are considerable quantities of fibrous tissue and more especially in those

parts where the glandular elements are as yet well preserved. These are probably the remains of the interstitial and interlobular connective tissue. Yet, in some places these fibres are interspersed with cartilage cells to such a degree as to give the structure the character of fibro-cartilage, as we find it in the auricle.

The tumor, as far as examined by me, contains but very few capillary blood-vessels in its outer portions. The fibrous capsule which evidently enclosed the tumor was the capsule of the lachrymal gland.

MICROSCOPICAL DIAGNOSIS.

Enehondroma myxomatodes carcinomatodes glandulæ lachrymalis.

THE USE OF CARBOLIC ACID IN PURULENT AFFECTIONS OF THE CONJUNCTIVA AND CORNEA.¹

BY G. HERBERT BURNHAM, M. B.

Trin. University, Toronto, F. R. C. S. E., M. R. C. S. Eng., Late Resident Surgeon to Moorefield's Eye Hospital, London.
Toronto, Canada.

A few years ago when Resident Surgeon to the Moorefield's Eye Hospital, London, I introduced into ocular practice the use of the 5 per cent. lotion of carbolic acid in gonorrhœal ophthalmia. Previous to this I had tried every variety of treatment then recommended with a success not very encouraging.

The deep transparent excavations of the cornea so frequent in this affection so often followed by perforation and prolapse of

1. A part of this paper was read before the Ontario Medical Association at Hamilton.

the iris, or deeply infiltrated ulcers which, through leaking in their floor, give rise to falling forwards and adhesion of the iris to the posterior surface of the cornea not again to be loosened; or other cases in which the ulceration rapidly involved the whole cornea, causing destruction of vision, and at times of the eye itself—all these terminations have I at different times witnessed and, seemed powerless to prevent. If the changes did not go so far still I have been kept on the wings of expectation, not knowing, with the arsenal of remedies then at my command, what the outcome might be. These are a few of the considerations which made me anxious to get a better and more reliable remedy. Now, after a considerable lapse of time, I feel that I have secured the desired remedial measure in carbolic acid. I have tested its merits in all the various forms of gonorrhœal ophthalmia, for instance, in that with much serous chemosis and swelling of the ocular and palpebral conjunctivæ; in that where the œdema is as great, but harder and denser; in that where the conjunctivæ of eyeball and eyelids and the sub-conjunctival tissue, are so fully loaded with exudation as to give the brawny, mottled look of diphtheritic ophthalmia. In fact, quite lately, I had a case, that of a young man, in whom the inflammation was the most violent I had ever witnessed. The partly everted lids had the mottled, white and red look with inability to remove any of the infiltrations so characteristic of diphtheritic ophthalmia. When the tissues began to unload themselves, quite large pieces came away leaving excavated and bleeding surfaces. I value the treatment by carbolic acid so much above all the other varieties that I have ever employed, that I now use no other. Under its influence, the transparent excavations quickly heal, and, moreover, have never, since I began its use, progressed to perforation, as formerly so often the case. The same may be said with respect to the other forms of corneal ulceration brought to our notice in gonorrhœal ophthalmia.

I, however, met with one form of corneal mischief, which I do dread, and against which I am not as well provided, as I could wish. This form is the deep, circumscribed infiltration of the cornea with the external surface unabraded. Here the mor-

bid process goes on extending inwards till hypopyon comes. After this the external surface ulcerates, and then the part is so weak, that at once perforation of the cornea and entanglement of the iris, more or less complete, take place. The powerlessness of carbolic acid in this variety is due to its inability to reach the seat of mischief.

The consequences in these cases being such as I have mentioned, have determined me to do *Saemisch's* operation when the opportunity is given me, and by so doing bring the abscess under the benign influence of this acid. This action I shall take though well aware of the great danger of incising the cornea in the midst of such a fierce purulent discharge.

As is well-known in the worst forms of gonorrhœal ophthalmia the lids are so swollen and stiff, that only very partial or no eversion can be made. This prevents the proper application of other forms of treatment, such as strong solutions of nitrate of silver, the mitigated and pure stick. The carbolic acid lotion travels with great ease beneath the lids, and hunts out as it were all the obscure places. The way in which to make such a thorough application, can after a short time, be taught any moderately skillful nurse. These last truths I consider of great moment, and factors telling much in its favor.

The course pursued in the treatment of a case of gonorrhœal ophthalmia is as follows: The patient is ordered to bed; then there is placed at his bedside a large basin of cold water in which there is always kept a big piece of ice. The eye is to be bathed by the patient, or by the nurse, very frequently so as well to cleanse the eye. In the intervals clothes wet in the iced water are constantly to lie upon the closed eyelids. The lotion of a strength 1 in 20, is to be thoroughly applied *every hour*, the lids being as well everted as possible. I always apply the lotion very freely, and at the same time tell the patient to move the eyeball about, so as to give the lotion as free access as possible. These applications are to be made day and night. In consequence of this a nurse must be in constant attendance. The pain and smarting, which ensue after using the carbolic acid, last but a few seconds, and are succeeded by a feeling of comfort and relief. This is another point in its favor.

and in direct contrast to the effects of the powerful caustics heretofore employed. As the discharge becomes thinner and more laudable, the 5 per cent. lotion is to be used every second hour, and during the intervening hour, the $2\frac{1}{2}$ per cent., or 1 in 40, is to be applied. As the virulence of the affection goes on diminishing, the 1 in 40 may be used altogether. I do not employ the watch glass protector, the ingenious contrivance of Dr. Buller, of Montreal, for the sound eye. I tell the patient to lie on the side on which the affected eye is, and warn him of the danger of inoculation. I consider these measures to be sufficient precautions, when using so frequently an application of such strong antiseptic properties.

I look upon this lotion, as the most effective and reliable remedy, we have at our command in gonorrhœal ophthalmia; and the more I make use of it, the greater becomes my faith in its power for good. The great *antiseptic* and *astringent* properties of carbolic acid place it in my opinion without a rival in the treatment of this inflammation.

This is its history in my hands with regard to the foregoing affection. I shall now mention it with respect to other purulent affections, especially where the cornea is markedly implicated. One of the most dreaded sequels to a cataract extraction is purulent infiltration of the corneal wound. When this infiltration of the cornea has made its way to *Descemet's* membrane, and is also spreading in other directions in the corneal substance, and is associated with free purulent discharge, there is a feeling in the mind of the operator that the eye is as good as lost. It is in just such cases that I have more than once been completely successful, and have secured an unimpaired eye. I well recollect one case, that of an old and feeble man, an inmate of Moorefield's Eye Hospital, in whose eye on the third day after the operation, when union had taken place, infiltration of the wound set in. This under the usual mode of treatment in such cases got worse and worse. The infiltration alarmingly increased in depth and width, and the discharge became markedly purulent and copious. It was quite evident that improvement must quickly take place, or the eye would be lost. I now vigorously applied the 5 per cent. carbolic acid lotion. The result was that in two days the eye was

out of all danger. Then, on examining the wound, there was to be seen a deep, broad excavation reaching to *Descemet's* membrane, with a ragged but healthy surface. The surrounding cornea was bright and clear. This excavation gradually filled up, and the patient went out with a good, serviceable eye.

In those cases of kerato-iritis, where the corneal ulceration is extensive, this lotion has been used with most beneficial results. Here it is combined with the usual treatment of atropine, warm bathing and constitutional remedies.

I have based all my remarks upon those cases in which the corneal inflammation was extensive, and associated with more or less purulent discharge; and where a new departure in treatment would show its usefulness, and enable a just conclusion to be drawn, in other words in test cases.

If I think a weaker lotion than the 5 per cent. will answer the purpose, I may not at any time use the 5 per cent.

I feel that I am fully justified in strongly recommending the carbolic acid lotion in the various and kindred affections laid before you; for it has so often come out victorious in real test cases, and where previously non-success had too often been my lot.

It is very necessary to use the *pure* carbolic acid, as any impurities give rise to such irritation and sometimes pain, as not only seriously to interfere with its full and proper application, but also materially to lessen its curative properties.

A CASE OF SYMPATHETIC IRRITATION OF RIGHT EYE, CAUSED BY OSSIFICATION OF CILIARY BODY AND ANTERIOR PART OF CHOROID OF THE LEFT EYE.

BY GEO. W. SMITH, M. D., FORT SMITH, ARK., UNITED STATES
EX-SURGEON.

L. R. E., 48 years, rheumatoid affection of large joints and hypertrophy with dilatation of the heart, consulted me in the winter of 1880.

History—Received an injury to left eye in 1862 from piece of percussion cap while target shooting; the cornea was penetrated on the temporal side and healed, giving him no trouble, and as he states, sight remained good for eighteen months. He contracted a severe catarrh, from which his left eye became inflamed and the sight destroyed.

He has more or less pain in the stump, radiating to the frontal, temporal and occipital regions since the catarrhal attack, and was treated for *neuralgia* by several physicians. After examining him, I advised immediate enucleation, for the following reasons: The left eye or stump was painful, and sight destroyed. Also the right eye was irritated, there was photophobia and lachrymation and weak accommodation. He declined to have the operation performed and returned to his physician, who had the hardihood to deny the existence of such a condition as sympathetic irritation, and advised him to hold on to the stump, being better than an artificial eye. In August 1884 he again consulted me; he was much reduced in health with constant pain in the stump, also frontal, temporal and occipital regions; his former condition intensified. I stated to him that enucleation was the only remedy, to which he consented, and on the morning of Aug. 18, 1884, under chloroform administered by Dr. Leo Bennett, the stump was removed. On examination of the stump, the ciliary body and anterior part of the choroid were found to be ossified: failed to find the piece of percussion cap. He is entirely relieved of pain, and the irritation of his right eye disappeared, with $S = \frac{20}{\infty}$. He wears an artificial eye satisfactorily. In this case the ciliary nerves were undoubtedly the carriers of sympathetic irritation.

CORRESPONDENCE.

The Committee on Organization of the Ninth International Congress, to be held in the United States in 1887, met in Washington, D. C., on November 29, 1884.

The following is a condensed report of the rules adopted: The Congress will be composed of members of the regular medical profession who shall have inscribed their names on the Register of the Congress and shall have taken out their tickets of admission.

The American members of the Congress shall be appointed by the American Medical Association, by regularly organized State and local medical societies, and also by such general organizations

relating to special departments and purposes, as the American Academy of Medicine, the American Surgical Association, the American Gynæcological, Ophthalmological, Otological, Laryngological, Neurological, and Dermatological Societies, and the American Public Health Association; each of the foregoing Societies being entitled to appoint one delegate for every ten of their membership.

All Societies entitled to representation are requested to elect their delegates at their last regular meeting preceding the meeting of the Congress, and to furnish the Secretary General with a certified list of the delegates so appointed.

The work of the Congress is divided into eighteen Sections, as follows, viz:

1, Medical Education, Legislation and Registration, including methods of teaching, and buildings, apparatus, etc., connected therewith; 2, Anatomy; 3, Physiology; 4, Pathology 5, Medicine; 6, Surgery; 7, Obstetrics; 8, Gynæcology; 9, Ophthalmology; 10, Otology; 11, Dermatology and Syphilis; 12, Nervous Diseases and Psychiatry; 13, Laryngology; 14, Public and International Hygiene; 14, Collective Investigation, Nomenclature, and Vital Statistics 16, Military and Naval Surgery and Medicine; 17, Experimental Therapeutics and Pharmacology; 18, Diseases of Children.

Notices of papers to be read in any one of the Sections, together with abstracts of the same, must be sent to the Secretary of that Section before April 30, 1887. These abstracts will be regarded as strictly confidential communications, and will not be published until the meeting of the Congress. Papers relating to questions not included in the list of subjects suggested by the Officers of the various Sections will be received. Any member, after April 30, wishing to bring forward a subject not upon the programme must give notice of his intention to the Secretary General at least twenty-one days before the opening of the Congress. The Officers of each Section shall decide as to the acceptance of any communication offered to their Section, and shall fix the time of its presentation. No communication will be received which has been already published, or read before a Society.

The officers elected are as follows:

President.—Dr. Austin Flint, Sr., of N. Y. Vice-Presidents.—Dr. Alfred Stillé, of Philadelphia; Dr. Henry I. Bowditch, of Boston; Dr. R. P. Howard, of Montreal, Canada. Secretary-General.—Dr. J. S. Billings, U. S. A. Treasurer.—Dr. J. M. Browne, U. S. Navy. Members of the Executive Committee (in addition to the President, Secretary-General, and Treasurer)—Dr. I. Minis Hays, of Philadelphia; Dr. A. Jacobi, New York; Dr. Christopher Johnston, of Baltimore; Dr. S. C. Busey, of Washington

The Executive Committee will proceed at once to complete the work of organization.

J. S. BILLINGS, Secretary-General.

Washington, D. C., Dec. 1, 1884.

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ON THE OPERATIVE TREATMENT OF ENTROPIUM.

By JOHN GREEN, M. D., ST. LOUIS.

[Continued from page 200.]

Before passing to the consideration of the numerous operative methods which have been devised especially for the cure of entropium, it is important to insist once more upon the distinction between simple inversion of the eyelid from perverted muscular action and the more intractable organic affection which depends upon structural changes from cicatrization in the tarsal conjunctiva and tarsal tissue, and in the posterior angle of the lid-margin. This distinction, although doubtless recognized from very early times, is nevertheless first clearly stated by the systematic writers of about half a century ago¹, who testify to the efficacy of various methods then in vogue when applied to the treatment of muscular entropium (*E. spasticum* and *E. senile*), but regard cicatricial entropium (*E. organicum*) as far less

1. Jüngken; Chelius; et al.

amenable to treatment or as incurable. Accordingly we find that the writers of the eighteenth and first half of the nineteenth century lay great stress upon the palliative treatment of trichiasis, by means of systematic and frequently repeated epilation, to the exclusion, almost, of methods addressed to the radical cure of entropium; methods which, if noticed at all, are mentioned only to be rejected, or, perhaps, to be hesitatingly accepted as of limited value and of only occasional applicability. In fact the operative treatment of entropium appears to have been less perfectly understood and practiced fifty years ago than it was in the time of Celsus, and we may still turn with profit to the medical writers of antiquity for suggestions of methods once successfully practiced but subsequently neglected and forgotten.

The various operative procedures applicable to the treatment of entropium may be grouped in three divisions, according as they are intended, (*a*) to effect traction upon the lid-margin through the skin, (*b*) to relax the ciliary portion of the orbicularis muscle, or (*c*) to correct the incurvation of the tarsal tissue by bending it, or by transplanting the lid-margin forwards. Of these indications any two, or all, may be realized in a single operation, and this is actually the case with many of the better methods now in use, and also, in a lesser degree, even with some of the methods which have been already referred to as especially designed for the cure of trichiasis.

Of the operative methods intended to effect the eversion of the lid-margin by traction through the skin, one of the most ancient² consists in the excision of a large oval or crescent-shaped piece of skin from the eyelid, and it is even now a not infrequent experience of the ophthalmic surgeon to meet with cases in which nearly all the integument of the lid has been thus ruthlessly sacrificed by some reckless or inexperienced operator. The effect of this procedure in everting the lid-margin is greatest when the excision of skin has been made close to the line of the cilia, but it is, at the best, very slight, and is not at all increased by increasing the height of the excised flap at the expense of the integument in the neighborhood of the orbital

2. Celsus, VII, VII, 8; et al.

margin. As a cure for entropium it is, by itself, one of the least effective methods, and when misapplied it may give rise to very great disfigurement. As applied to the upper lid its effect is rather to lift them to evert, and this to the extent even of preventing the closure of the eyelids although the eye may still continue to be teased by misdirected cilia.

The destruction of a portion of the integument of the eyelid by means of the hot iron or by caustics, or by strangulation by means of a clamp, is described by various medical writers of antiquity,³ and in some of its forms still holds a place in the surgery of certain Asiatic races. The effectiveness of the actual cautery is determined mainly by two factors, namely, the proximity of the burning to the line of implantation of the cilia and the depth to which the tissues are destroyed by it. Obviously, with the heated iron or with caustics these points cannot always be accurately regulated, but with the Galvanic cautery it is possible to perform the operation with comparative precision, and thus to combine the greatest possible effect with the least possible disfigurement. To this end the burning should be done along a line as near as possible to the row of cilia, without injuring their bulbs, and should extend into or even through the muscular layer; it should be limited, also, to the destruction of a very narrow strip of skin. The effect of the cauterization, especially when it is carried deep enough not only to destroy a strip of the muscular layer, but also to sear the subjacent tarsal tissue,⁴ is to establish a firm cicatricial union of the margins of the wound in the skin with the tarsal tissue, and thus, through the contraction of the cicatrix, to evert the lid-margin. It is obvious, however, that the degree of eversion which may be thus obtained is not to be precisely estimated beforehand, and that the measure of effect ultimately realized may vary materially from that required for the perfect cure of the entropium.

The idea of establishing a firm cicatricial union between the skin near the lid-margin and the tarsal tissue, by means of an accurately planned cutting operation conjoined with deeply

3. Paul. Ægin; Albucasis; Rhazes; et al.

4. Delpech; Middeldorpf.

placed sutures, has been recently adopted and tested by several surgeons⁵ and with the happy result of adding a valuable and substantially new method to those previously in use. In the operations of Anagnostakis and Panas a longitudinal incision is made through the skin and orbicularis muscle two or three millimetres from the row of cilia, and the subjacent tarsal tissue is denuded, either by the excision⁶ or by the simple dissection⁷ of the overlying muscular fibres, so as to expose also a little of the tarso-orbital fascia. Then leaving intact⁸ the strip of skin and muscle next the lid-margin, or dissecting it carefully from its tarsal attachments,⁹ sutures are inserted, uniting this border of the cut with the tarsal tissue or with the tarso-orbital fascia. The result is a strong traction exerted through the skin of the eyelid upon the lid-margin, tending measurably to evert it and also to diminish the inversion of the cilia. The operation of Hotz differs from those just mentioned in that (*a*) the skin and muscle are incised along a curved line corresponding to the attached border of the tarsal tissue. (*b*) the muscular layer overlying the entire tarsal tissue is dissected cleanly away, and (*c*) both of the edges of the incision in the skin are united by a line of sutures with the attached border of the tarsal tissue at or near the line of its junction with the tarso-orbital fascia. By this method very effective traction is exerted upon the anterior angle of the lid-margin, and the inverted cilia may often, even in cases of considerable incurvation of the tarsus, be drawn sufficiently away from the eyeball to remove this source of irritation. The great extent of the union effected by this method between the skin of the eyelid and the tarsal tissue is also an important safeguard against a relapse, and the disfigurement

5. Anagnostakis. *Annales d'Oculistique*, XXXVIII. Panas, *Nouveau Dictionnaire de Médecine et de Chirurgie Pratique*; article "Panpières." Hotz, *Archives of Ophthalmology*, VIII, 2, 1879. Ibid. XI, 4, 1882.

6. Anagnostakis.

7. Panas.

8. Anagnostakis.

9. Panas.

which follows such operations as involve the sacrifice of any considerable portion of the integument of the lid is avoided. Of all operative methods based upon traction through the skin of the eyelid this is doubtless the most effective; nevertheless its best results are attained mostly in cases of muscular entropium, while in cicatricial entropium it is often confessedly insufficient unless supplemented by grooving the tarsus or by some other equally radical procedure.¹⁰

The artificial production of vertical bands or bridles of cicatricial tissue in or beneath the integument of the eyelid, by means of sutures carried through the areolar tissue between the muscle and the tarsal tissue,¹¹ and extending from the lid-margin upward towards the eye-brow or downward towards the cheek, has been much lauded as a cure for entropium as well as for trichiasis. Unless conjoined with incisions in the tarsal tissue, or its ligamentous attachments,¹² it is not a very effective procedure, and it is open also to the objection already noticed in connection with the excision of a large flap of skin from the upper lid, that it tends quite as much to lift the eyelid as to evert its margin. It has, besides, the especial disadvantage of giving rise to peculiarly unsightly scars in the skin of the eyelid, and often also to a notched or scalloped deformation of the line of cilia.

Acting upon the theory that abnormal contraction of that portion of the orbicularis muscle which overlies the tarsal tissue is to be accounted the principal active cause of entropium, several surgeons of eminence have devised special operative methods for weakening or relaxing this muscle. Of the procedures which have been suggested for this purpose two of the most

10. In the beginning Hotz advised in certain cases to split the lid-margin, as in the Jæsche-Arlt operation for trichiasis; in his later publication he rejects this and adopts instead of it the procedure of grooving the tarsal tissue according to the methods of Strætfeild and Snellen. In its latest modification Hotz's operation is essentially the operation of Snellen, with the disadvantage of being decidedly more complicated in execution.

11. Wardrop, see *London Lancet*, July 14, 1827; Gaillard, 1844.

12. Pagenstecher, *Compte-rendu du Congrès périodique international d'Ophthalmologie*, 1863.

important are the division of the external canthus, as recommended by Ware,¹³ and the division of the muscle itself by several transverse cuts, as advocated by Himley.¹⁴ Neither of these procedures can, however, be considered as a simple myotomy, since in canthotomy the external palpebral ligament is also divided, together with the skin and conjunctiva, and in Himley's operation the division of the muscle is combined with the excision of a broad flap of skin. The excision of a narrow strip of muscle, parallel and in close juxtaposition to the row of cilia, is adopted as a part of the procedure in the methods of several living surgeons,¹⁵ as well as in some of the operations for trichiasis already noticed.¹⁶ The simple excision of a strip of skin and muscle, about two millimetres in width, immediately in front of the row of eyelashes,¹⁷ is a very effective method in muscular entropium of the lower eyelid, and requires no sutures or other special dressing.

The correction of the pathological incurvation of the tarsal tissue has been recognized by many writers as a chief desideratum in the treatment of entropium, and it has been claimed for most of the procedures already mentioned that they tend more or less directly to this result. That the classical writers from the time of Celsus both recognized and intelligently fulfilled this indication, is shown by the prominent part which they assign, in their descriptions of entropium operations, to the under-incision of the eyelid—*subsectio palpebrae*.¹⁸ Nevertheless, this very effective incision fell into neglect, until it was revived in modern times by Crampton¹⁹ as a part of the complicated and

13. Chirurgical Observations relative to the Eye, 2d Ed., 1805, Vol. I, p. 96.

14. Himley, Krankheiten und Missbildungen des menschlichen Auges; I., S. 133.

15. Streatfeild; Snellen.

16. Vacca Berlinghieri, 1825; Pétrequin, 1834.

17. I first saw this simple and effective operation performed by Snellen, in 1866, but I am not certain as to its authorship.

18. Celsus; Paul.Ægin.

19. An Essay on the Entropeon, or Inversion of the Eyelids; London, 1805.

now generally disused operation which bears his name. The descriptions given of the under-incision by the classical writers are very concise, and to this cause, perhaps, is due the fact that it has not been adequately appreciated in later times. It consists in an incision through the tarsal conjunctiva, parallel to the lid-margin, and extending into or through the tarsal tissue; it is described as being in some cases sufficient in itself to cure the incurvation of the lid, but as requiring in other cases to be supplemented by the excision of a strip of skin from the front of the eyelid. In certain cases it was recommended to make two parallel cuts instead of a single under-incision.²⁰

As a means of facilitating the bending of the tarsus, or of effecting the transplantation of the unutilized lid-margin with its misdirected cilia, the under-incision has never been surpassed, and even when extended through the entire thickness of the tarsal tissue and combined with the excision of a strip of the lid-integument, the marginal portion of the lid still retains its vascular connections and continues to be adequately nourished through the intact muscular layer. The cilia-bearing marginal strip is, therefore, not exposed to the danger of sloughing, as sometimes happens in the original Jæseke-Arlt operation for trichiasis, and in the method presently to be noticed under the name of tarsotomy. The theoretical objection that it involves the division of the Meibomian glands or their ducts, applies equally to tarsotomy and to the grooving of the tarsal tissue, but the objection is of little weight in view of the fact that in a large proportion of the cases in which the operation is indicated the Meibomian glands have already become degenerated from pathological changes incident to the pre-existing trachoma.

Moreover, it is now abundantly proved that no practical inconvenience is to be apprehended from this cause, while, as compared with the grooving of the tarsus, the under-incision has the advantage of not encroaching further upon tissues often already shrunk as a result of previous cicatrization. When properly executed the under-incision generally heals smoothly, and in healing does not ordinarily tend to the reproduction of

²⁰, Aetius.

the original incurvation. This method differs, further, from all others in the fact that it may be repeated almost *ad libitum*, and may, therefore, be practiced at a comparatively early stage of the affection, and while the trachomatous process is still incomplete.

Tarsotomy (*tarsotomia*) is the name given by von Ammon to an incision through the entire thickness of the eyelid. As practiced by him the section corresponds in position to the under-incision of the classical writers, from which it differs in the fact that all the tissues of the lid are cut through, so that the marginal cilia-bearing strip is left as a detached bridge united to the rest of the eyelid at its two ends only. Combined with the excision of a broad strip of skin from the front of the eyelid, and the closure of the cutaneous wound by sutures, it constitutes the operative method known as von Ammon's *tarsotomia horizontalis*²¹. The special defect in this method lies in the fact that the marginal bridge must be made quite broad in order to diminish the danger of its destruction by sloughing; moreover the excised strip of skin is taken from the side of the wound furthest from the lid-margin, where the subjacent tissues are loosest and where the traction through the skin is least effective. Notwithstanding these shortcomings, the operation may be made to yield good results in most cases, and but for the danger of an occasional partial or total loss of the detached lid-margin by ulceration or sloughing, it would still deserve a high place among recognized operative methods.

The operation of Jæschke²² which has scarcely found a place in surgical literature except in the altered form in which it has been adopted by Arlt, differs hardly at all from von Ammon's *tarsotomia horizontalis* except in the accidental particular that it was originally proposed as an operation applicable to cases of partial rather than of total entropium.

A vertical section through the middle of the lower eyelid, in its entire thickness, was advocated by Ware²³ in certain cases

21. Zeitschrift für die Ophthalmologie, III, 1833.

22. Medicinische Zeitung, Russlands, 1844.

23. Op. cit. p. 97.

of incurvation of the tarsus with trichiasis, and a similar section of the upper lid has been lately revived as a means of diminishing tension in acute blennorrhœa. From recent experience of this procedure in the latter class of cases it appears to cause less deformity than might reasonably be expected: still it does not commend itself as a method likely to yield fine results in entropium.

Two vertical sections through the lid, near the inner and outer canthus respectively, constitute the leading feature in the method of Crampton already referred to. These sections were supplemented by an under-incision through the tarsal conjunctiva and by the excision of a portion of the lid-integument. Such radical measures as these can scarcely have failed to cure even the worst cases of entropium with trichiasis, but the operation is an unnecessarily severe one, and the three tarsal incisions are not more effective than the under-incision alone.

Canthotomy, or canthoplasty, is in very many cases an indispensable adjunct to other operative procedures in the treatment of cicatricial entropium. When the cut is made strictly in the line of the tendon of the orbicularis, it relaxes, to some extent, the marginal fibres of this muscle; besides enlarging the opening of the eyelids. But its greatest service is rendered when pains are taken especially to divide the external palpebral ligament, and thus to relieve the tarsal tissue from tension in a longitudinal direction. It is a not infrequent result of this operation to see the entropium disappear, after a few weeks, in the temporal third or half of the eyelid, leaving only the nasal or middle and nasal portions to be corrected by other means. Ware preferred to make the section of the outer canthus with a sharp, hooked bistoury, but at present it is usually done with strong scissors.

Grooving the front of the tarsal tissue, along a line parallel to and not far removed from its free border, is perhaps the most important modern contribution to the operative surgery of entropium. As described by Streatfeild,²⁴ a narrow strip of skin and muscle is excised down to the tarsal tissue, from

24. Ophthalmic Hospital Reports, I. 3, 1858.

which a narrow wedge-shaped slip is cut in such a manner as to permit the easy bending of the tarsal margin forwards. The wound may be allowed to heal by granulation,²⁵ or deep sutures may be inserted to draw together the two sides of the cut in the tarsal tissue, and, at the same time, close the gap in the skin,²⁶ or after exposing and grooving the front of the tarsus through a simple incision, the marginal bundles of the orbicularis may be excised, and the wound of the integument closed by deep sutures uniting both its lips to the tarsus along its line of junction with the tarso-orbital fascia.²⁷ The results of this operation, when carefully performed, are generally excellent. The grooving of the tarsal tissue, which is a rather troublesome and often tedious procedure, is best executed by the aid of a very sharp knife abruptly rounded at its tip. (See Fig. 10.)



Figure 10.

The removal of the entire tarsal tissue, whether by a bold excision,²⁸ or piecemeal,²⁹ is a procedure apparently prompted by despair of attaining a good result by other methods; I have not met with a case of entropium in which such an operation has appeared to me to be indicated.

25. Streatfeild.

26. Snellen, *Compte-rendu du Congrès périodique internationale d'Ophthalmologie*, 1863.

27. Hotz.

28. Saunders, *A Treatise on Some Practical Points Relating to the Diseases of the Eye*; London, 1811.

29. B. A. Pope, *Archives of Ophthalmology and Otology*, I, I, 1869.

[TO BE CONTINUED.]

A CASE OF DOUBLE OPTIC NEURITIS FROM CHRONIC CEREBRAL MENINGITIS—DEATH— AUTOPSY.

BY DAVID WEBSTER, M. D.,

Professor of Ophthalmology in New York Polyclinic.

The patient, a plumber and gas-fitter, twenty-eight years of age and unmarried, came under my observation in the absence of Dr. Agnew, on September 29, 1883. Eleven years previously he had suffered from a sun-stroke which had confined him to his bed for a week or more, part of which time he was delirious. Since that he had always been subject to attacks of headache. These headaches were aggravated by his often striking his head against beams or other obstructions on rising suddenly and carelessly while engaged in his work. He also contracted malaria, and had "chills and fever" which "hung about him" for some years, but which seemed to have left him about the time he began to lose his eyesight, a little over a year ago.

Ten months before I saw him his vision had failed so that he could no longer see to read ordinary print, and from that time on it grew gradually worse.

His family physician, in the spring of 1873, advised a trip to Europe. He therefore crossed the Atlantic and spent some time with his relations in Suffolk, England. On September 5, 1883, when about to return to America, he consulted Mr. Nettleship, of London, who examined him and made the following note on a blank which the patient retained in his possession:

"Right eye, vision = $\frac{20}{60}$. Left eye, vision = $\frac{20}{60}$; no improvement with glasses. Optic neuritis—lead?"

On testing his vision I found:

R. V. = $\frac{20}{60}$	} No improvement with glasses.
L. V. = $\frac{20}{60}$	

Ophthalmoscopic examination showed that both optic disks were very much swollen, both being hypermetropic at their summits from one-twelfth to one-tenth, and having fleecy-looking exudations obscuring their margins and sloping off gradually into the surrounding retina, which was nearly emmetropic. The retinal arteries were considerably reduced in size, the veins somewhat dilated and tortuous. There were no retinal hemorrhages.

His mother said she had noticed a peculiarity of his walk, a kind of staggering gait, since the 1st of July. His headaches had been worse of late, and he was much troubled with dizziness. He had never contracted venereal disease of any kind, nor had he ever used alcoholic stimulants. He had been an excessive consumer of tobacco, both by chewing and smoking, but had recently quit chewing and limited his smoking to two pipes a day.

On testing him with worsteds I found he was color-blind, calling green red, red magenta, blue yellow, etc.

From his history and symptoms I had no doubt that the cause of his optic neuritis was an intra-cranial one, and I thought it was probably either a chronic, basilar meningitis or a tumor of the brain. In order to exclude kidney disease, however, I had him collect all the urine he passed in the next twenty-four hours, and sent to Dr. E. A. Maxwell, of this city, for examination.

The following results were reported by Dr. Maxwell:

1. Good quantity.
2. Good specific gravity.
3. No albumen or sugar.
4. One broad hyaline cast.
5. A few cells of tubercular epithelium.
6. Some scanty, altered blood corpuscles.
7. Spermatozooids.
8. Crystals of oxalate of lime and triple phosphates."

I put the patient at once on mercurial inunction. A few days later I received a letter from his mother in which she said: "My son complained yesterday morning of sore mouth and gums. I washed off all the ointment. His face and head

looked so much enlarged last night. and all day he did not act so well as heretofore; was very quiet and would not talk at all. This morning at 4 o'clock, he commenced retching and vomiting. At first the vomited matter looked like green water, and afterward it was yellow, but so offensive I could hardly bear to stand by him. His head feels all enlarged, and is aching more after the retching. He says it must split open!"

My last note of the case, dated November 3, is:—"Patient does not complain now of headache or dizziness. He has had no attack of vomiting since that described by his mother in her letter."

The patient a few months later placed himself under the care of my friend, Dr. James Craig, of Jersey City, in whose care he died, and to whom I am indebted for the following careful notes of the remainder of his history and of his autopsy.

"Mr. S. came under my care on February 15, 1884, and presented the following symptoms: Total blindness, inability to walk, or even to stand alone, frequent and intense headaches and a sense of great fulness in the head. His urine was scanty, high in color, and at times albuminous. His efforts at micturition consumed from ten to thirty minutes. His bowels, as a rule, were constipated. When first seen, and for some time afterwards, he was unable to carry on conversation; and when questions were addressed to him he replied in monosyllables.

On account of his blindness and loss of power of locomotion I diagnosed his case as one of chronic cerebral meningitis, with pressure on, or inflammation of, the spinal cord.

The treatment consisted of counter-irritation by cantharidal collodion applied to the back of the neck and sides of the spinal column as far down as the sacrum. Under the impression that there was an exudation of serum and lymph I prescribed potassium iodide and bichloride of mercury; but learning that he had been ptyalized without benefit I abandoned the mercury and put him on increasing doses of potassium iodide. This was continued some time when syr. hydriodic acid (Gardner's) was substituted, with considerable benefit. The Galvanic battery was used, placing the positive pole on the back of the neck and passing the negative pole up and down the spine.

For his partial paralysis of the bladder I applied the positive pole of the Galvanic battery along the spine, especially over the lumbar and lower dorsal regions, while the negative pole was applied over the vesical region, with the happy result of a complete disappearance of the paralysis. Strychnia was given to increase muscular tone.

His symptoms gradually improved, and during the latter part of June he walked about four or five miles at a time. He experienced flashes of light, and at times could distinguish his mother's face, trees, houses, fences, animals, etc.

I saw him for the last time on July 16, and was informed of his demise on the 25th of the same month.

Two days before his death he was seized with a violent headache, nausea and vomiting, followed by convulsions, coma and death.

The autopsy was held on the 26th of July at his late home in Englewood, in the presence of three other physicians.

Autopsy.—Body well nourished, rigor mortis well marked, calvarium normal. There were several points of lymph on the vertex of the dura mater, no clot in longitudinal sinus, the convolutions were flattened from pressure within, and the surface of the brain was smooth. Beneath the points of exudation and for a small space around the dura matter was adherent. On removing the brain the pituitary body was torn off and through the small opening thus made serum poured out as from a fountain. On opening the ventricles they were found much distended by a large amount of very clear serum, estimated at from 8 to 10 fluid ounces. The lesions found satisfactorily account for all his symptoms and mode of death. At the request of the family no further examination of the body was made.

A CURIOUS DEFECT IN THE VITREOUS BODY.

BY W. CHEATHAM, M. D.,

Lecturer on Diseases of Eye, Ear and Throat, University of Louisville.

F. C., æt. 31, a man of not very good habits. Never had syphilis. Complains of inability to read for any length of time, which is accounted by the presence of hypermetropic astigmatism of $\frac{1}{xx1\frac{1}{4}}$; vision of right eye $\frac{20}{xL}$ with above glass.

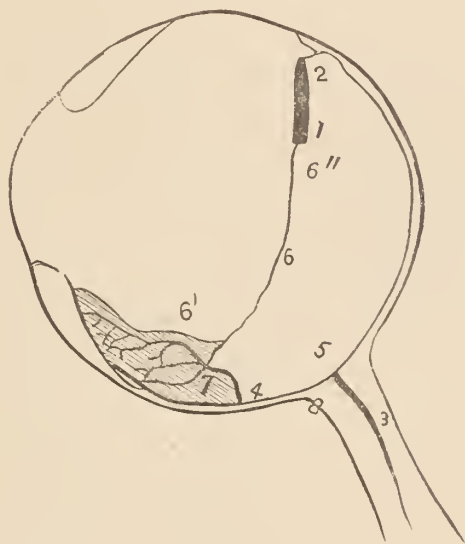


Fig. 11.

Vision of left $\frac{20}{xx}$. Gives a history of an injury to right eye resulting from a blow against a corn stalk while stooping in the dark. Says it pained him very much. Also gives a history of phlyctenular conjunctivitis when a child. On looking in with the ophthalmoscope the following conditions of things were observed:

The vessels were distributed in the retina as usual. The fundus was astigmatic. The axis of the astigmatism was 135° . In the vitreous was a grayish looking membrane resembling a detached retina. This membrane could be seen best through a $+1\frac{1}{2}$. Figure 12 represents the membrane and fundus as seen with the ophthalmoscope. No 1 in figure 12 is an artery given off from one of the retinal arteries at No. 2, passing into the upper end of the false membrane, as represented at No 2, figure 11. This artery is quite large and appears to stop abruptly as if cut off at 6'', figures 11 and 12. There was also noticed at



Fig. 12.

6'', figures 11 and 12, a thin narrow membrane No. 6, extending downwards, and when a couple of lines below lower edge of optic nerve spreading out fan-shaped, 6', and apparently attaching itself about the lower edge of the ciliary body. An artery given off from the lower branch of the arteria centralis retinae at No. 4, figure 11, passes into the vitreous at the beginning of and into the fan-shaped membrane at No. 7 in figures 11 and 12, dividing into several branches in this membrane. Looking well down through a $+1\frac{1}{6}$ or a $+1\frac{1}{2}$, this fan-shaped membrane and its blood-vessels can be seen distinctly. The

fundus can be seen distinctly through this fan-shaped membrane by means of a $+\frac{1}{48}$, and shows an old choroidal inflammation heaping of pigment, etc. The dark lines in figure 11 represent retinal arteries. No 8 in figure two is optic nerve entrance. The abrupt ending of the artery No. 1 in figures 10 and 11 may be explained in this way: The artery probably bends on itself and returns to the retina. At No. 2 in figures 10 and 11 the artery can be seen leaving the retina.

I report the case, hoping it will be of some interest, never having seen one like it myself.

A CASE OF DIVERGENT SQUINT. UNUSUAL DIFFICULTIES IN CORRECTING IT BY OPERATION.

BY DR. C. F. CLARK.

Lecturer on Ophthalmology in Starling Medical College, Columbus, O.

The following case may prove of interest as illustrating a peculiar condition of one of the recti muscles as well as a somewhat unusual means of overcoming an extremely persistent divergent squint.

On February 14, 1884, Miss. —, æt. 23, or thereabouts, a strong, healthy Irish girl, applied to me at my office for the correction of marked divergent squint of the right eye which had existed since early childhood.

Upon examination I found marked amblyopia with a divergence of about 6".

The eye followed the movements of the hand easily in every direction, but the degree of power in the muscles could not be determined owing to the absence of fixation.

The vision in the left eye was normal, there being manifest hypermetropia of .75 dioptries.

In the right eye, though the media were clear, vision was almost *nil* owing to marked amblyopia.

The ophthalmoscope revealed the fact that the eye was practically emmetropic and the fundus apparently normal.

It was noticeable that in fixing with the left (the good) eye its axis seemed directed somewhat to the temporal side. From this I concluded that the macula of each eye was probably situated somewhat to the temporal side of its normal position; this, perhaps, accounting for the tendency to divergence.

On February 28, the patient being under the influence of ether, I operated by dividing the external rectus of the right eye.

My purpose had been also to divide the external rectus of the left eye, but to this the patient would not consent.

This operation, though the division was free, yielded only a partial result, and in the course of a few days even this seemed to disappear.

Five days later, the patient still objecting to the operation upon the left eye, I placed her under the influence of ether and advanced the internal rectus muscle of the right according to the method of Dr. Prince, as described by Dr. Noyes, of New York.

The internal rectus muscle was found to be very small, weak and narrow at its point of insertion and, though a considerable advancement was made, and the attachments of the external rectus freely broken up, the good result was very transient.

For a few hours it appeared that I was to have an admirable result, but later the conjunctival fold at the point where the advanced internal rectus was attached appeared to have become stretched to such a degree as to allow the eye to resume its former position.

Six days later, the patient's consent having finally been obtained, she was again placed under the influence of ether, and I divided the tendon of the external rectus of the left eye, again separating freely the attachments of the external rectus of the right; even removing a narrow strip of the conjunctiva and capsule of Tenon.

After making these divisions as free as I thought safe, my chagrin may be imagined, when, after she had recovered from the effects of the anæsthetic, I discovered that the divergence was overcome only in part.

At this stage the idea suggested itself to me that by means of

a suture I might fasten the eyes in a position of convergence.

In order to accomplish this in such a manner as to distribute the tension equally between the two eyes and allow the one to yield which could best do so, I adopted the following plan:

The administration of the ether being renewed, near the nasal limbus of each cornea I inserted a silk suture from above downward beneath the conjunctiva for a distance of about one c.m., tying the thread in such a manner as to include the fold of conjunctiva in a loop. The needle with which the suture was introduced on each side was now passed through a small fold of skin at the inner canthus of each eye and the ends of the thread tied in a bow-knot across the bridge of the nose. By this means, the fold of skin at the inner canthus acting as a pulley, I was enabled to produce a considerable degree of convergence of the visual axes and to readjust by tightening the knot in case of loss by stretching of the conjunctival fold.

This thread was left in place over night, and notwithstanding the extent of these various operations there was no severe reaction and the result was admirable.

Allowing for the slight divergence of the left eye, which, as mentioned above, appeared to be due to the position of the macula to the temporal side of the posterior pole, the axes were now parallel and the result was satisfactory.

Three weeks later I find the following note in my case-book:

Eyes now appear straight and look quite well, but she states that at times the right eye turns outward and may remain in its old position for five minutes to half an hour.

She finds that the divergence is most apt to occur when she is at work and tired or excited.

The special advantages gained by this method of holding the eyes in position were, first, the distribution of the force between the two eyes in such a manner that the one would yield which could best do so; and second, that neither eye was absolutely limited in its movements but only relatively to the other eye, for the motion of either was communicated by means of the thread across the bridge of the nose to the other eye.

A marked peculiarity of this case, and the feature which was the cause of the great difficulty experienced in overcoming the

divergence, was the atrophic condition of the internal rectus muscle of the right eye.

At its point of insertion it was thin and rounded, little larger than an ordinary match, and presented none of that flattened tendinous expansion belonging to the normal recti muscles.

The movements of the eye were not limited in any direction, though, as stated above, I was unable to determine the power of overcoming prisms owing to the extreme degree of amblyopia.

This condition also interfered with a subjective determination of the refraction, though as judged by the ophthalmoscope, the diverging eye was apparently emmetropic while the other eye when tested by the chart revealed manifest hypermetropia = .75 D.

An interesting problem in the study of relative accommodation is suggested by this case.

It will be remembered that the left eye while fixing a point directly forward has its geometric axis directed outward to a very perceptible degree.

Now, supposing this same condition to exist in the amblyopic eye, which is apparently emmetropic, only a slight degree of convergence would be necessary for the accommodative act, and is it not possible that in early childhood the disuse of the internal recti in the accommodative act may have resulted in weakness of these muscles. And, that this may have been greatest in the right, or emmetropic eye, because in the left, which is hypermetropic, the increased impulse imparted to the third nerve to overcome the hypermetropia may have been shared by the internal rectus of that eye, and it consequently retained its power?

The above is with some diffidence suggested as a possible explanation.

If the case should be considered of sufficient interest to warrant it, the writer would be happy to see any suggestions which might assist in solving the problem as to the cause of the condition found.

TWO CASES OF EXUDATIVE CHOROIDITIS WITH SUBSEQUENT DETACHMENT OF THE RETINA.

BY ADOLF ALT, M. D.

Exudative choroiditis, which, although not a rare disease, but rarely comes under our observation at an early stage, is a disease which in many instances is readily influenced by our remedies. At least, we have often occasion to see a very dim vitreous body clear up gradually, the exudations between choroid and retina may partially or totally disappear, if they have not yet become organized, and sight, often reduced to almost nothing, may again become very useful. In other cases no form of treatment seems to influence the exuded masses in the least, and all remedies appear useless. Such experiences are certainly common to all oculists, and it is not to them that I now want to draw attention. I have within the last two years had occasion to observe two patients who came under my treatment on account of exudative choroiditis, which latter was readily influenced by treatment, who, however, soon afterwards presented themselves with detachment of the retina. In both cases this trouble too, yielded to treatment. The question now is, is such an occurrence of detachment of the retina after exudative choroiditis, perhaps, due to the remedies employed, or, is it simply due to a change in character of the choroiditis, from the exudative (fibrinous) into a serous form with subsequent detachment of the retina?

I give the history of the two cases in full.

CASE I.—Miss R. B., æt. 18, a somewhat anæmic individual, came to me August 13, 1883. She had lost her right eye when about ten years old in consequence of several operations for traumatic cataract, performed on that eye by a notorious quack. She has always been shortsighted. For some months she has noticed black spots and shadows before the good left eye.

Her myopia was found to be one-half, with $V = \frac{5}{6}$. There

was a large posterior staphyloma. The vitreous body was generally turbid and contained a large number of floating opacities of various sizes and forms. The retinal veins appeared hyperæmic, the optic papilla was reddish.

The eye was put at absolute rest by instillations of atropia and by confining the patient to the dark room and bed. Four leeches were applied to the left temple. Iodide of potassium was given internally in ten grain doses three times a day, and the bowels were kept open by cathartics.

Under this treatment the general turbidity of the vitreous body cleared up rapidly and the floating opacities changed their shape and became smaller, and some of them disappeared altogether.

On the 1st of September the vitreous body was clear. There were as yet three large floating bodies, but the optic nerve and retina appeared normal, and the patient was very happy with the result. I discharged her, giving her the usual advice to be very careful in using this only eye, which was continually in danger from the high degree of myopia under which she was laboring. I ordered her to continue the iodide of potassium in five grain doses three times a day and enjoined upon her to report whenever she should notice the slightest change in her vision.

A week afterwards, on the 7th of September, patient came to me early in the morning. She was greatly frightened and very nervous. She told me she had not used her eye, since I had discharged her, for any near work and had felt perfectly well until this morning, when she noticed very alarming photopsiæ. I examined her carefully, but could not distinguish anything new in the condition of the eye. I then sent her home with the advice to keep as quiet as possible and to lie down. The same afternoon I was called to see her, "because she was blind."

When examining her then, I found something more than the inner half of her visual field wanting and perception in the outer half considerably reduced. With the ophthalmoscope the corresponding part of the retina was seen to be detached.

I at once injected subcutaneously one-sixth of a grain of muriate of pilocarpine and ordered absolute rest on the back. In the following days I made every day a subcutaneous injection of this remedy, increasing the dose each day. On September 11, one-third of a grain produced a momentary collapse and vomiting, which, however, yielded at once to brandy.

On September 12, part of the detached retina was seen to be re-applied and the visual field was accordingly enlarged. I was now informed that the patient's menses ought to have appeared a week before, but had failed to do so. Dr. Baumgarten was therefore called in, but he found everything in a normal condition and did not like to prescribe anything to bring on the flow unless I should consider it absolutely necessary for the safety of the patient's eye. As I did consider it so, the patient at his suggestion took a hot sitz-bath on the 15th, and her menses appeared on the 16th of the same month.

On the 18th, the retina was perfectly reappplied and the visual field and acuity had both returned to their former status. The muriate of pilocarpine injections were now discontinued.

The patient has had no relapse to this date, that is, for nearly a year and a half.

CASE II.—Mrs. M. St., æt. 47, a very nervous lady, member of a family in which heart disease and pathological conditions of the blood-vessels have in succession caused several deaths, who herself has lost her menses when 38 years old, consulted me on June 9, 1884.

Two weeks before, while at supper, she noticed a cloud coming before her right eye. She had some weeks previously seen "spiders and cobwebs," but paid not much attention to them.

R. E. $V = \frac{6}{66}$ eccentrically; L. E. $V = \frac{20}{LXX}$. The ophthalmoscope showed in the right eye a very turbid vitreous body with floating opacities. The optic nerve was but very dimly visible, and in the region of the macula lutea a large grayish-white irregular spot could just be discerned. The left eye showed a decidedly hyperæmic condition of the optic papilla and retina. The patient was put to bed in a dark room, the accommodation was paralyzed by atropia and subcutaneous injections of muriate of pilocarpine were made daily, beginning

with one-eighth of a grain. This dose was daily increased, until a slight collapse occurred after an injection of one-fifth of a grain. After this never more than one-sixth of a grain was given. At the same time the bowels were kept loose.

Under this treatment sight improved continually. On the 24th of June V was in the R. E. = $\frac{1}{C.C.}$, in the L. E. = $\frac{2}{X.L.}$. The vitreous body in the R. E. had cleared up considerably. The exudation in the region of the macula lutea had evidently become reduced in size and its margin began to show sharp dark lines.

The patient was now given one-tenth of a grain of bichloride of mercury three times a day for about three weeks, and this was followed up by ten grain doses of iodide of potassium three times a day, until August 20, when I saw her again.

V was now equally good in both eyes, being $\frac{2}{X.L.}$, although somewhat eccentric in the R. E. There was a large, clearly defined atrophic spot in the choroid just below, and a little inward from the macula lutea. L. E. apparently normal. Presbyopia.

Two months after this consultation, on October 30, the patient came to see me again, being greatly agitated. A brother (who was laboring under an aneurism of the aorta and who has since died from it) had paid a visit to her house and she had exerted herself considerably in order to make him comfortable and had even done all the cooking. From that time she had noticed that her R. E. was becoming more clouded again and for three days her L. E. was also considerably affected.

V was now in the R. E. = $\frac{2}{L.X.X}$ and in the hitherto good L. E. = $\frac{2}{C.C.}$. The ophthalmoscope revealed a detachment of the retina in both eyes, lying downwards. This detached portion of the retina in the R. E. was a very peripheral one, while in the L. E. it almost reached up to the optic nerve entrance.

The patient was at once put to bed and in a dark room. The subcutaneous injections of muriate of pilocarpine were resumed every other day and the bowels kept open. Drinking was reduced to the utmost and her meals were well salted.

On November 19, the detached retinae were nearly altogether reappplied. In the left retina a number of small hemorrhages had appeared near the large veins.

On December 16 the conditions were found almost unchanged. V. was now in the R. E. = $\frac{20}{L}$, in the L. E. = $\frac{20}{L \times X}$.

The patient has gone South to spend the winter, and although I was to be informed of any change in the sight that might occur, I have not heard from her since.

I may here state that I have of late in several cases of detachment of the retina insisted on reducing the quantity of fluids consumed by the patients to the smallest possible quantity, and had their dishes well salted. I am satisfied that this *régime* had a beneficial influence upon the result of their treatment.

TRANSLATION.

The following is a translation of parts of a paper *On the Local Application of Cocaine* by ADOLF WEBER (Darmstadt), *Zehender's Klinische Monatsblaetter f. Augenheilkunde*.

* * * 3. I stretched the musculus rectus internus (according to Michel's? method) in a case in which, after paralysis of the abducens muscle, the eye-ball showed a convergence of 5 mllm, when the patient gazed at an object straight before him. This encheiresis, as far as my opinion goes, now only really deserves a place in our therapeutics; since, according to my experience, formerly it had always to be abandoned on account of the patient's refusing to stand the repetition of this painful manipulation or because it produced inflammation of the conjunctiva or because this membrane became torn. * * *

Perhaps one of the most important consequences of the anæsthetic properties of cocaine will be, that the tension of the eye-ball can be readily measured, on the cornea as well as on the sclerotic, and as often as desired, by means of a tonometer, without being in the least interfered with by reflex contraction of the muscles. The cocaine itself markedly reduces the tension of both cornea and sclerotic, in the normal as well as in the inflamed eye.

A further property of cocaine is its power to dilate the pupil. After the instillation of a solution of from two to ten per cent, under the precautions mentioned above, the pupil begins to dilate in from twenty to eight minutes, and in from forty to twenty-five minutes this dilatation reaches its maximum and remains so for some time, then gradually diminishing until after from six to twenty-hours it has disappeared altogether. The character of this dilatation of the pupil is totally different from the one which is brought about by atropia. At no time, not even during the acme of the cocainization, as it is reached for instance by the instillation of several drops of a ten per cent. solution, is the motility of the pupil wanting; it acts promptly and undoubtedly upon all influences, which produce changes in the pupil of the normal eye; thus, especially when light is thrown on both eyes, when an effort at accommodation is made, or upon painful irritation of the surface of the eye-ball. The sphincter pupillæ acts freely within its normal area of action, starting from the position into which it has been brought by the influence of the cocaine; yet a perfect ad maximum contraction of the pupil is no longer possible. We can, therefore, not speak of a paralysis of the sphincter pupillæ nor even of a loss of its energy. What then is the cause of this dilatation of the pupil, which, as long as everything producing contraction is excluded, is as perfect as ever atropia can make it? In spite of the most recent microscopical researches we are forced to assume for this an active dilatatory apparatus. Clinical observation always gladly makes use of the histological facts, but it must not be fettered by the latter. The clinical facts are less adulterated, because they are independent of all eventualities of the methods of examination. The history of the decussation of the optic nerve fibres well exemplifies, how successfully a good clinical observation may persist in its *ceterum censeo*. A similar persistence is greatly to be advised in the question of the existence of a dilatator pupillæ. If we remember how often the existence of this muscle has been denied, and that it always had to be acknowledged again, the clinician will act wisely in counting with an active dilatatory apparatus. Further proofs of the existence of such an apparatus, deducted

from my experiments, are: 1.) An iris which has been paralyzed by atropia or a disease of the oculomotor nerve, will retract further upon the instillation of cocaine, in the same way as it does upon irritation of the sympathetic nerve; 2.) A pupil which is contracted by the action of eserine or pilocarpine can be dilated to medium width by cocaine, and it then remains immovable in this position, independent of all influences which otherwise would cause it to move. This is not, however, due to the mutual neutralization of the physiological effects of the alkaloids just mentioned, as is plainly seen by the fact that their other properties are unimpaired; thus the effect of the eserine and pilocarpine with regard to the accommodative apparatus—thus the anæsthetizing action of the cocaine and some other properties yet to be mentioned. The condition of the pupil referred to is, therefore, simply the expression of mechanical equilibrium between the circular and the radiary fibres.

This antagonistic equilibrium is produced by one part of pilocarpine to four of cocaine, and by one part of eserine to twenty-five to thirty of cocaine; this means that the instillation of a mixture in the proportions just given, does not alter the size of the pupil. * * *

A mixture of, say, one drop of a two per cent solution of pilocarpine and four drops of a two per cent solution of cocaine instilled into the conjunctival sac at intervals of from five to ten minutes, will produce in an emmetropic eye a myopia of from seven to eight D., which will last two hours, while externally no change is visible. Only the motility of the pupil is wanting. * * *

Everybody knows that the pupil, even after having been dilated ad maximum by atropia, will contract at once when the humor aqueous escapes from the anterior chamber. Such a contraction does not or hardly follows after the instillation of cocaine, especially not when the sphincter pupillæ has first been paralyzed by atropia. The lens is pushed towards the cornea without any change in the size of the pupil, as often as the aqueous is allowed to flow off. * * *

I will add here that adhesions of the pupillary margin which for weeks had been treated unsuccessfully by atropia, gave way

at once without the aid of instruments, as soon as the effect of cocaine was superadded. * * *

When from three to five drops of a solution of from two to ten per cent are instilled into a healthy emmetropic eye, the far-point remains unchanged. When, however, the same dose is instilled into a highly myopic eye or into an eye in which the circulatory fibres are paralyzed, by genuine mydriasis or consequent upon the use of atropia, the far-point is changed; in the myopic eye the far-point is shifted slightly nearer, in the mydriatic eye it is moved a small distance farther off. The near-point, however, is undoubtedly moved away from all eyes, but to a varying degree; by instilling one drop of a ten per cent solution every ten minutes, five drops produced a loss of the range of accommodation equal to two-thirds; we could, however, never bring about a total union of the far-point and near-point. * * *

CORRESPONDENCE.

The following letter was received and is here published in justice to Mr. Foucar:

I notice in your journal of November 15, in the article on Cocaine, some unfavorable remarks in reference to my preparation as sent you. At first the demand was so great that I was unable to crystallize the drug, and the solution had some color. But now, having increased my facilities for manufacturing, I am able to produce the cocaine in crystals, a sample of which I take pleasure in sending, that you may give it a fair trial. You will find it, if your experience is the same as Drs. Moore, Gruening and others here, as good as the foreign made salt. Should you find the results favorable I should be pleased to have you kindly so state in your next issue, as the unfavorable comments may have a bad effect otherwise. I send also a graduated bottle for making solutions.

Very Respectfully,

F. W. FOUCAR & Co.

I have since received a sample of three grains of muriate of cocaine from Mr. Foucar. The crystals were somewhat different from Merck's and the 4 per cent. solution I made of them was turbid, and after it had been standing for some time a considerable amount of undissolved matter remained lying at the bottom of the bottle. Merck's *cocainum muriaticum solubile* is dissolved altogether. The action of this *sample* of Foucar's muriate of cocaine with regard to anæsthesia and mydriasis is about the same as that of Merck's. It does, however, not affect my accommodation, nor do the mydriasis and anæsthesia appear as soon after the instillation of a drop of the 4 per cent. solution of Foucar's salt, as they do after the use of the same quantity of Merck's.

I am glad Mr. Foucar acknowledges that his facilities, when he sold the solution, were not fully what they ought to have been. Certainly my remarks were absolutely true and based upon experiments made before the St. Louis Society of German Physicians, on the eyes of my friend and colleague Dr. W. Hunicke. But the fact that a solution was sold which did not come up to the mark may very well account for many of the reports of cases in which cocaine was tried and found to be useless.

If Mr. Foucar's muriate of cocaine is in future always as good as the *sample* he so kindly sent me, it will surely help us quickly over the difficulties arising from the inadequate supply of this valuable drug, we are as yet laboring under.—
EDITOR.

EDITORIAL NOTICE.

With this number the editor and publishers of the AMERICAN JOURNAL OF OPHTHALMOLOGY want to express their thanks to the subscribers and supporters of this journal for the year 1884.

Although they knew that it would be a difficult task to start and keep alive a similar journal, they thought it was worth the

trial. The large list of subscribers the journal has at once obtained and which has been continually increasing has shown them that not only was there room for such a journal, but that this journal seemed to fill it.

In thanking our co-workers for their support we can only express the hope that they will help us also in future to increase the utility and field of this journal.

As it is, however, a difficult matter to have always enough *original* work on hand for a certain date to fill a certain number of pages, we shall from this forth depart from this arrangement, and, appearing regularly on the 15th of each month, give what there is on hand for this date in the same way as it is done by all similar journals. At the same time the editor will give such selections from foreign journals as he may from time to time think of value for our readers.

Original communications on all matters concerning ophthalmological science are again most earnestly solicited.

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